FINAL ACOUSTICAL ANALYSIS REPORT

Kenwood Apartment Project
9250 Kenwood Drive,
Spring Valley, California 91977

County of San Diego
Site Plan Permit Application No. STP 06-032 & Log No. 06-19-026

Prepared For

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1.0 EXECUTIVE SUMMARY

The proposed project, known as Kenwood Apartment Project, consists of the construction of a 11,520 square foot building with eight rental apartments, 11 single car garages, two off-street parking spaces and private patios. The project site is located at 9250 Kenwood Drive in Spring Valley within unincorporated San Diego County, California.

Review of the surrounding developments in the community, along with the geographic and topographic site conditions show that automobile, truck and bus traffic noise predominantly account for the noise environment in the vicinity of the project. According to information obtained from the Traffic Forecast Information Center maintained by the San Diego Association of Governments (SANDAG), an increase in traffic volumes is anticipated by the year 2030 along State Route 94 in the vicinity of the project site. Future traffic volumes on the adjacent Kenwood Drive and Helix Street will remain unchanged. This will give rise to potentially higher noise levels at the proposed project location.

The current calculated on-site traffic noise level, 50 feet from the centerline of Kenwood Drive, is 66.0 Community Noise Equivalent Level (CNEL). By the year 2030, the projected level at the same location will reach 66.4 CNEL. Two main factors account for this rise in noise impact: an increase in traffic volume on State Route 94 from the current 83,000 ADT to 133,000 ADT by the year 2030, and a change in roadway classification for Kenwood Drive. Please see Section 3.2 for more information.

Future noise levels at all proposed exterior use areas, such as patios and common use spaces, will not exceed 60 CNEL due to proposed exterior wall elements already incorporated into the plan design. No mitigation considerations are necessary to comply with San Diego County noise requirements for exterior noise sensitive areas. Please refer to Section 5.1 for details.

The results of the traffic noise modeling reveal that future noise levels at the proposed building facades will range from 49.0 CNEL on the first level of the west façade of the proposed building to 66.0 CNEL on the second level of the south façade. Where future exterior noise levels at building façades exceed 60 CNEL, an acoustic study is required to determine if unmitigated future interior noise levels in habitable residential space will achieve noise levels below 45 CNEL, with all windows opened. A mechanical ventilation system is required if this condition cannot be met to provide a viable environment with noise exposure not greater than 45 CNEL, with all windows closed.

Mechanical ventilation, which allows windows to be closed for extended intervals, is required for Unit 1 to achieve interior noise levels below 45 CNEL (projected to the year 2030) in habitable residential space as dictated by California Building Code Section 1208A.8.2. Please see Section 5.2 for more details.

Calculations show that the combined HVAC equipment noise impact from the proposed facility will be as high as 47.4 dBA L_{EQ} at the eastern property line, at the worst-case location. The proposed mechanical equipment installation for the Kenwood Apartment project requires mitigation to comply with San Diego County Code of Regulatory Ordinances, Section 36.404. An upgrade to the proposed wood or vinyl perimeter wall from the proposed 6 feet to 7.5 feet in height is recommended. The resulting mitigated mechanical equipment noise levels at the limits of the project property will meet all County noise requirements. Please see Section 5.3 for more details.

2.0 INTRODUCTION

This acoustical analysis report is submitted to satisfy the acoustical requirements of the County of San Diego for a Site Plan Permit. Its purpose is to assess noise impacts from nearby roadway traffic, and to identify project features or requirements necessary to maintain project site outdoor use noise levels of 60 CNEL or less as required by the County of San Diego's Noise Element of the General Plan. The project interior environment will be evaluated and recommendations provided, if necessary, to attain worst-case noise levels no greater than 45 CNEL. This study also evaluates proposed mechanical equipment noise levels at the nearest, relevant property lines, to assess compliance with the County of San Diego's noise requirements.

All noise level or sound level values presented herein are expressed in terms of decibels, with A-weighting to approximate the hearing sensitivity of humans. Time-averaged noise levels are expressed by the symbol L_{EQ}, for a specified duration. The CNEL is a 24-hour average, where sound levels during evening hours of 7:00 p.m. to 10:00 p.m. have an added 5 dB weighting, and sound levels during nighttime hours of 10:00 p.m. to 7:00 a.m. have an added 10 dB weighting. This is similar to the Day-Night sound level, L_{DN}, which is a 24-hour average with an added 10 dB weighting on the same nighttime hours but no added weighting on the evening hours. Sound levels expressed in CNEL are always based on the A-weighted decibel. These metrics are used to express noise levels for both measurement and municipal regulations, for land use guidelines, and for enforcement of noise ordinances. Further explanation can be provided upon request.

2.1 Project Location

The project site is located on the north side of Kenwood Drive, west of Helix Street in the community of Spring Valley, California. The proposed project consists of a new building on a roughly rectangular lot, measuring 0.408 acres. Land use designation for this lot is RU 29. The Assessor's parcel number (APN) for the property is 504-302-38.

The project location is shown on the Thomas Guide Map, Figure 1, following this report. An Assessor's Parcel Map, Satellite Aerial Photograph, Topographic Map, and Planned Land Use Map of this area are also provided as Figures 2 through 5.

2.2 Project Description

The proposed project consists of the new construction of a single two-story building, consisting of eight future rental apartment units in the community of Spring Valley, California. Please refer to Appendix A: Excerpts of Architectural Plans for more information.

The project site lies within 1/3 of a mile from SR-94 to the north and east. Noise impact from the freeway is not substantial at the project site however, due to the topographical layout of the area and the acoustic shielding provided by intervening structures.

3.0 ENVIRONMENTAL SETTING

3.1 Existing Noise Environment

The primary noise sources in the vicinity of the project site largely consist of automobile and truck traffic noise from Kenwood Drive and Helix Street.

San Diego Metropolitan Transit System bus traffic, specifically from Route 851, along Kenwood Drive contributes to the site's noise environment. A bus stop, situated on Kenwood Drive approximately 100 feet to the west of the property, services the neighborhood. Direct line-of-sight between the property and the bus stop is limited by on-street parking spaces. Transit bus operations are not considered to incur further noise penalty for this reason, and are deemed to be appropriately accounted for by traffic flow figures obtained from SANDAG.

Bancroft Drive to the west of the project site carries commuter traffic. Its impact to the project site is negligible due to geographical separation, intervening topography and existing structures.

State Route 94 which runs to the north and east of the site supports inter-regional freeway traffic. A prominent 100-plus foot geographical protrusion directly to the north of the site eliminates any effect from the freeway from the northerly direction. Its acoustical impact to the site is not substantial due to the attenuating effects of local topographical features and intervening developments.

No other noise source is considered significant.

3.1.1 Vehicle Traffic Noise

Kenwood Drive is a two-lane, two-way Collector Road with a center turning laneway in the vicinity of the project site. The paved roadway measures approximately 36 feet from curb to curb. The posted speed limit in the area is 35 mph. According to the San Diego Association of Governments, Kenwood Drive currently serves commuter traffic at an estimated volume of 8,000 Average Daily Trips (ADT). This information can be referenced at the Traffic Forecast Information Center accessible online at: http://maximus.sandag.org/tfic/trfic30.html .

Helix Street is a two-lane, two-way Local Street located to the east of the site. The paved roadway is approximately 32 feet in width, curb to curb. The speed limit is 25 mph. It supports 4,000 ADT, a good portion of which consists of medium to heavy truck traffic.

State Route 94 is a State Highway supporting 2-way regional traffic in the east-west direction. It currently has a total of 4 lanes and supports a volume of 83,800 ADT according to Caltrans.

Current and future traffic volumes for the roadway sections near the project site are shown in Table 1. For further roadway details and traffic volume information, please refer to Appendix B: Traffic Noise Model (TNM) Data and Results.

Table 1. Overall Roadway Traffic Information				
Roadway Name	Speed Limit (mph)		Current ADT	Future (2030) ADT
	Current	Future		
Kenwood Drive	35	40	8,000	8,000
Helix Street	25	25	4,000	4,000
SR-94	65	65	83,800	133,000

Traffic composition information for these roadways was not readily available. Following research on neighboring and surrounding land use, roadway classification and application of our professional experience during our on-site study, percentages of 7% medium and 1% heavy truck traffic was applied to Kenwood Drive. Similarly, medium and heavy truck percentages were estimated at 7% and 2%, and 2.8% and 2.2%, for Helix Street and SR-94 respectively to reflect road usage.

3.1.2 Measured Noise Level

An on-site inspection and traffic noise measurement were made on the afternoon of Wednesday, November 8, 2006. The weather conditions were as follows: clear skies, medium humidity, and temperature at 80 degrees Fahrenheit with winds from the west at 2-5 mph. A “one-hour" equivalent measurement was made at a location approximately 50 feet from the centerline of Kenwood Drive and 164 feet from the Helix Street centerline. The microphone was mounted on a tripod and fixed at approximately five feet above the existing project site grade.

Traffic volumes for Kenwood Drive and Helix Street were recorded for automobiles, medium-size trucks, and large trucks during the measurement period. After a continuous 15-minute sound level measurement, no changes in the L_{EQ} were observable and the measured result was documented. The measured noise level and related weather conditions are found in Table 2. The calculated equivalent hourly vehicle traffic count adjustment and a complete tabular listing of all traffic data recorded during the on-site traffic noise measurement are found in Appendix B: Traffic Noise Model (TNM) Data and Results.

Table 2. On-Site Noise Measurement Conditions and Results	
Date	November 8, 2006
Time	3:09 to 3:24 pm
Conditions	Clear Skies, Winds from the West @ 2-5 mph, 80 ^{o}F with Medium Humidity
Measured Noise Level	62.5 dBA L_{EQ}

3.1.3 Calculated Noise Level

Noise levels were calculated for the site using the methodology described in Section 4.1 for the location, conditions, and traffic volumes observed during the noise measurements. The calculated noise levels (L_{EQ}) were compared with the measured on-site noise level to determine if adjustments or corrections (calibration) should be applied to the traffic noise prediction model in the Traffic Noise

Model software (TNM). Adjustments are intended to account for site-specific variances in overall reflectivity or absorption, which may not be accurately represented by the default settings in the model.

The measured noise level of 62.5 dBA L_{EQ} at Kenwood Drive was compared to the calculated (modeled) noise level of 64.0 dBA L_{EQ}, for the same weather conditions and traffic flow. No adjustment was deemed necessary based on the 1.5 dB discrepancy between the measured and calculated noise levels. This information is clearly presented in Table 3.

Table 3. Calculated versus Measured Traffic Noise Data

Calibration Receiver Position	Calculated	Measured	Difference	Correction
Kenwood Drive	64.0 dBA L_{EQ}	62.5 dBA L_{EQ}	1.5 dB	None

3.2 Future Noise Environment

The future (year 2030) traffic volume for Kenwood Drive was obtained from SANDAG. It is expected that future traffic on Kenwood Drive will not fluctuate from the current traffic volume of 8,000 ADT.

There is a proposed downgrade classification for Kenwood Drive as documented in the report entitled "Proposed Changes to Circulation Element Road Network and Framework", dated August 2, 2006. This document, prepared by the Department of Planning and Land Use and the Department of Public Works of the County of San Diego outlines a proposed downgrade to the classification of Kenwood Drive from Collector Road to Light Collector. If this recommendation is implemented, the current posted speed limit of 35 mph in the project's vicinity will become 40 mph with the new classification. Please see Appendix C: Relevant Roadway Information for more information.

Estimated traffic volume on Helix Street in the future is unchanged from current conditions. An ADT of 4,000 for the year 2030 is estimated for Helix Street in the project's vicinity.

Through correspondence with Mr. Tony Blades at District 11 Planning, California Department of Transportation, the future traffic estimate for SR-94 near the project site is placed at 133,000 ADT by the year 2030. Furthermore, an addition of two new lanes, one each for east and westbound traffic, is anticipated. This will bring the total number of lanes on SR-94 to six in the project's area.

The same truck percentages from the existing traffic volumes were used for future traffic volume modeling. The roadway classification, speed limit, alignment and roadbed grade elevations are expected to remain the same for these sections of roadways unless specifically addressed above. For further roadway details and projected future ADT traffic volumes, please refer to Appendix B: Traffic Noise Model (TNM) Data and Results.

4.0 METHODOLOGY AND EQUIPMENT

4.1 Methodology

4.1.1 Field Measurement

Typically, a "one-hour" equivalent sound level measurement (L_{EQ}, A-Weighted) is recorded for at least one noise-sensitive location on the site. During the on-site noise measurement, start and end times are recorded, vehicle counts are made for cars, medium trucks (double-tires/two axles), and heavy trucks (three or more axles) for the corresponding road segment(s). Supplemental sound measurements of one hour or less in duration are often made to further describe the noise environment of the site.

For measurements of less than one hour in duration, the measurement time must be long enough for a representative traffic volume to occur and the noise level (L_{EQ}) to stabilize; 15 minutes is usually sufficient for this purpose. The vehicle counts are then converted to one-hour equivalent volumes by applying an appropriate factor. Other field data gathered include measuring or estimating distances, angles-of-view, slopes, elevations, roadway grades, and vehicle speeds. This information is subsequently verified using available maps and records.

4.1.2 Roadway Noise Calculation

The Traffic Noise Model software, TNM Version 2.5 released in February 2004 by the U. S. Department of Transportation was used for all traffic modeling in the preparation of this report. TNM calculates the daytime average Hourly Noise Level (HNL) from traffic data including road alignment, elevation, lane configuration, projected traffic volumes, estimated truck composition percentages and vehicle speeds. The HNL is equivalent to the L_{EQ}, and may be converted to CNEL by the addition of 2.0 decibels, as suggested in the Wyle Laboratories Study (see reference).

The daytime average hourly traffic volume, evaluated from Average Weekday Trips (AWT) data as shown in the Wyle Study to be simply 5.8% of AWT, is then applied to models in TNM. Current and future CNEL levels are calculated for predetermined receiver locations. Further explanation can be supplied on request.

4.1.3 Exterior-to-Interior Noise Calculation

The State Building Code, local municipalities, and other agencies (such as HUD) require an acoustical analysis for any multi-unit residential facility proposed in an area that has or will have exterior noise levels in excess of 60 CNEL. This analysis must demonstrate building features and mitigation that will provide interior noise levels of 45 CNEL or less for residential units, classrooms, or other habitable interior areas and 50 CNEL or less in office space. CNEL is considered synonymous with L_{DN}.

Analysis for the interior noise levels requires consideration of:

- Number of unique assemblies in the wall (doors, window/wall mount air conditioners, sliding glass doors, and windows)
- Size, number of units, and sound transmission data for each assembly type
- Length of sound impacted wall(s)
- Depth of sound impacted room
- Height of exterior wall of sound impacted room
- Exterior noise level at wall assembly or assemblies of sound impacted room

The Composite Sound Transmission data is developed for the exterior wall(s) and the calculated noise exposure is converted to octave band sound pressure levels (SPL) for typical traffic type noise. The reduction in room noise due to absorption is calculated and subtracted from the interior octave noise levels, and the octave band noise levels are logarithmically summed to yield the overall interior room noise level. When interior noise levels exceed 45 CNEL, the noise reduction achieved by each element is reviewed to determine the most cost-effective and compliant design modifications. Windows are usually the first to be reviewed, followed by the doors, and finally the walls.

4.1.4 Evaluation of Exterior Wall

Modeling of floor/ceiling and wall assemblies using building plan information is accomplished using INSUL Ver. 6.1, which is a model-based computer program, developed by Marshall Day Acoustics for predicting the sound insulation of walls, floors, ceilings and windows. It is acoustically based on theoretical models that require only minimal material information and can make reasonable estimates of the sound transmission loss (TL) and Sound Transmission Class (STC) for use in sound insulation calculations.

INSUL can be used to quickly evaluate new materials or systems or investigate the effects of changes to existing designs. It employs the simple mass law and the coincidence frequency approach to model individual materials and can simulate the behavior of complex assembly partitions. It has evolved over several versions into an easy-to-use tool and has refined the theoretical models by continued comparison with laboratory tests to provide acceptable accuracy for a wide range of constructions. INSUL model performance comparisons with laboratory test data show that the model generally predicts the performance of a given assembly within 3 STC points.

4.1.4 Cadna Noise Modeling Software

Modeling of the outdoor noise environment is accomplished using Cadna Ver. 3.6, a model-based computer program developed by DataKustik for predicting noise impacts in a wide variety of conditions. Cadna (Computer Aided Noise Abatement) assists in the calculation, presentation, assessment, and mitigation of noise exposure. It allows for the input of project information such as noise source data, barriers, structures, and topography to create a detailed CAD model and uses the most up-to-date calculation standards to predict outdoor noise impacts. All of the noise sources included in this Cadna analysis were modeled as non-directional point sources.

4.2 Measurement Equipment

Some or all of the following equipment was used at the site to measure existing noise levels:

- Larson Davis Model 824 Sound Level Meter, Serial # 824A3044
- Larson Davis Model CA250 Calibrator, Serial # 2625

- Windscreen
- Tripod
- Distance Measurement wheel and Compass
- Digital camera
- Portable Anemometer
- Digital Thermometer

The sound level meter was field-calibrated prior to and following the noise measurement to ensure accuracy. All sound level measurements conducted and presented in this report, in accordance with the regulations, were made with a sound level meter that conforms to the American National Standards Institute specifications for sound level meters ANSI SI.4-1983 (R2001). All instruments are maintained with National Bureau of Standards traceable calibrations, per the manufacturers' standards.

5.0 IMPACTS AND MITIGATION

5.1 Exterior

The current calculated on-site traffic noise level at a position fifty feet from the centerline of Kenwood Drive is 66.0 Community Noise Equivalent Level (CNEL) on the project property. By the year 2030, the projected level at the same location will experience increased impact directly resulting from a worst-case consideration that the roadway classification downgrade of Kenwood Drive will increase the speed limit from 35 to 40 mph. In this worst case scenario, the future noise impact at the same location will be 66.4 CNEL.

The noise environment at the project site in the future will primarily be the result of vehicle traffic traveling on Kenwood Drive and Helix Street. Without mitigation or proposed project structures, the future 65 CNEL contour is located at approximately 66 feet north of the centerline of Kenwood Drive. The future 60 and 55 CNEL traffic noise contour are similarly located at approximately 105 and 165 feet north of the centerline of Kenwood Drive respectively. For a graphical representation of these contours, please refer to Figure 7: Site Plan Showing Future Traffic CNEL Contours and Noise Measurement Location.

An analysis to determine future noise impact at proposed building façades indicates that future noise levels will range from 49.0 CNEL on the first level of the west façade of the proposed building to 66.0 CNEL on the second level of the south façade of the proposed building. Table 4 tabulates the projected exterior noise levels at each façade of the proposed building. Please refer to Figure 8: Site Plan Showing Future CNEL at Exterior Building Façades for more information.

Table 4. Future CNEL at Proposed Building Facades

Receiver	Level	Receiver Location	Exterior CNEL
R11	1	North Facade	50.2
R12	1	East Facade	50.7
R13	1	East Facade	56.2
R14	1	South Facade	64.7

Table 4. Future CNEL at Proposed Building Facades			
Receiver	**Level**	**Receiver Location**	**Exterior CNEL**
R15	1	West Facade	58.4
R16	1	West Facade	49.0
R21	2	North Facade	54.9
R22	2	East Facade	57.6
R23	2	East Facade	60.9
R24	2	South Facade	66.0
R25	2	West Facade	61.7
R26	2	West Facade	52.5

Policy 4b of the Noise Element of the General Plan of San Diego County requires that exterior noise levels at outdoor use spaces such as patios and common use areas must not exceed 60 CNEL as a result of new development. As such, a future conditions noise evaluation at each of the proposed apartment unit patios and project's common use area was completed. The results are summarized in Table 5 below.

The future noise levels at the proposed outdoor use areas range from 50.4 to 59.0 CNEL. These results reflect the projected noise environment with the proposed 6-foot tall wood or vinyl property perimeter wall and the proposed 3-foot tall stucco wall with 2-foot railing surrounding each patio. All outdoor use spaces as proposed will conform to the noise requirements of San Diego County without additional modifications. Figure 9: Site Plan Showing Future CNEL at Outdoor Useable Spaces provides a visual description of measurement locations.

Table 5. Future CNEL at Proposed Outdoor Use Spaces			
Receiver	**Level**	**Receiver Location**	**Exterior CNEL**
R1	1	Unit 1 Patio	59.0
R2	1	Unit 2 Patio	54.5
R3	1	Unit 3 Patio	52.2
R4	1	Unit 4 Patio	51.1
R5	1	Unit 5 Patio	51.6
R6	1	Unit 6 Patio	50.4
R7	1	Unit 7 Patio	50.7
R8	1	Unit 8 Exterior/ Common Use	51.3

5.2 Interior

The State of California requires buildings to be designed in order to attenuate, control, and maintain interior noise levels not greater than 45 CNEL in habitable multi-family residential space as formulated in California Building Code Section 1208A.8.2. Contemporary exterior building construction is expected to achieve at least 15 decibels of exterior-to-interior noise attenuation, with windows opened. As a result, exterior noise levels of more than 60 CNEL may potentially result in interior conditions that fail to meet the 45 CNEL requirement for residential habitable space.

Future exterior traffic noise levels at several of the proposed building façades exceed 60 CNEL. Due to the elevated worst-case future exterior traffic noise level impacts at these building façades, an exterior-to-interior noise analysis was conducted to evaluate the sound reduction properties of exterior wall, window, and glass door construction designs. In particular, this analysis included ~~two~~ *four* bedrooms on the second floor in Units 1 and 2, the living/ dining room on the second floor in Unit 8 and the living/ dining room on the first floor in Unit 1. These spaces were found to be impacted by exterior traffic noise levels greater than 60 CNEL for the most part, and selected to provide a reasonably representative cross-section of the worst impacted units according to our noise modeling results. Please refer to Appendix D: Exterior-to-Interior Noise Analysis.

Specific architectural details for the exterior wall, windows and sliding glass door designs have not been proposed by Project Architect at Schuss Clark, Edison Gan. A typical contemporary exterior wall design was chosen to represent the future exterior wall design based on observation of common industry practice for the purpose of our analysis. This wall design consists of the following material elements:

- Stucco layer, 7/8-inch thick on metal lath
- 2-inch by 6-inch wood studs placed 16” on center
- 5-1/2-inch thick layer of fiberglass insulation, placed in stud cavity
- Single layer of 5/8-inch Type X gypsum board

Provided that appropriate measures are taken to preserve acoustic performance, this wall design should provide sound transmission protection at a minimum of STC 44 according to analysis results from Marshall Day Acoustics’ INSUL version 6.0. This result is provided in Appendix E: Sound Insulation Prediction Results.

At a minimum, exterior window and balcony door designs rated at STC 28 are required for all installations. The 1/2-inch thick, dual insulating window and doors are the minimum recommended configuration and consist of the following:

- 1/8-inch thick glass
- 1/4-inch air gap
- 1/8-inch thick glass

The listed STC value is based on “Center-of-Glass” test data. Any window and frame configuration or sliding glass door assembly may be used as long as it meets or exceeds the minimum STC rating and corresponding octave band performance for the above window. Window “Center-of-Glass” performance for the recommended window is provided in Appendix E: Sound Insulation Prediction Results.

Exterior apartment doors should be constructed with a solid core and a minimum thickness of 1-3/4 inches. Each door installation must include all-around weather-tight door stop seals and an improved threshold closure system. The additional hardware will improve the doors' overall sound reduction properties. The transmission loss (TL) of an exterior door without weather-tight seals is largely a factor of sound leakage, particularly at the bottom of the door if excessive clearance is allowed for air transfer. By equipping exterior doors with all-around weather-tight seals and an airtight threshold closure at the bottom, an increase of up to 10 STC points can be realized.

Additionally, it is imperative to seal and caulk between the rough opening and the finished door frame for all doors by applying an acoustically resilient, non-skinning butyl caulking compound. Sealant application should be as generous as needed to ensure effective sound barrier isolation. The OSI Pro Series SC-175 acoustic sound sealant is a product specifically designed for this purpose. Head and jamb door seals are also recommended for all door frame stops. If the acoustical door stop seals are applied on top of the stops in the frame, the height and width of the opening is reduced, and the handle may require an extended offset for ease of operation. For more information, please refer to Appendix F: Recommended Products.

The results of our exterior-to-interior noise analysis is summarized in Table 6, which documents interior noise levels with recommendations made herein.

Table 6. Future Interior Noise Levels with Mitigation Recommendations

Location	Level	Maximum Exterior Facade Impact (CNEL)	Minimum STC Rating		Interior CNEL		Mechanical Ventilation
			Window	Balcony Door	Windows Open	Windows Closed	
Bedroom (east) Unit 1	2	66.0	28	-	47.7	33.7	Required
Bedroom (west) Unit 1	2	66.0	28	-	47.3	33.3	Required
Living/ Dining Room Unit 8	2	54.9	28	28	34.1	22.2	Not Required
Living/ Dining Room Unit 1	1	64.7	28	-	43.2	32.0	Not Required
Bedroom (west) Unit 2	2	61.7	28	-	41.8	27.8	Not Required
Bedroom (east) Unit 2	2	60.9	28	-	42.3	28.2	Not Required

In instances where interior residential habitable space is exposed to noise levels greater than 45 CNEL with all windows in the open position, appropriate means of air circulation and provision of fresh air must be present to allow windows to remain closed for extended intervals of time so that acceptable levels of noise can be maintained on the interior.

The mechanical ventilation system shall meet the criteria of the Uniform Building Code (specified in Chapter 12, Section 1203.3 of the 2001 California Building Code). It must possess the capability to provide sufficient fresh air exchanges to individual rooms through a separate supply line duct controllable via a "Summer Switch" for circulation of unheated air. "Make-up air" must be supplied from the outside through a minimum 4-foot duct with two right-angle bends with interior duct insulation, or an equivalent design. The ventilation system shall not compromise the sound insulation capability of the exterior wall or be dependent on ventilation through windows.

Representative exterior-to-interior calculations show that mechanical ventilation is required (on the second floor) in Unit 1 to achieve future interior noise levels not exceeding 45 CNEL.

With the exterior wall and window assemblies, balcony and exterior door configurations specified above, all interior residential habitable rooms will comply with California Building Code noise requirements, with windows and doors in the closed position.

5.3 Mechanical Equipment Noise

This section of our analysis investigates the noise impact of the operation of the proposed project site's mechanical equipment on the surrounding neighborhood consisting primarily of residential land use. An assessment to determine if mitigation is necessary and feasible to achieve compliance with San Diego County Code of Regulatory Ordinances is presented.

Noise emission data is often supplied per the industry standard format of sound power level, which is the total acoustic power radiated from a given sound source as relates to a reference power level of 10 picowatts. Sound power level differs from sound pressure level, which quantifies the fluctuations in air pressure caused by acoustic energy.

Sound Pressure Level, or SPL, describes the observable effect of acoustic energy radiation, quantifying sound level as perceivable by the receiver. When Sound Pressure is used to describe a noise source, the distance between source and receiver must be known in order to yield useful information about the power rating of the source. Sound power level, on the other hand, is a specialized analytical metric used to fully quantify the acoustic energy emitted by a source and is complete without accompanying information on the position of measurement relative to the source. It may be used to calculate the sound pressure level at any desired distance.

5.3.1 Applicable Noise Standards

The noise regulations applicable to this project are contained within the San Diego County Code of Regulatory Ordinances, Section 36.404, entitled Sound Level Limits. Based on these noise regulations, the following property line noise limits apply for this project: 50 dBA from 7 a.m. to 10 p.m. and 45 dBA from 10 p.m. to 7 a.m. Our mechanical equipment noise impact evaluation will be based on the more restrictive nighttime limit of 45 dBA.

Please refer to the County of San Diego scoping letter, dated April 11, 2007, and pertinent sections of the San Diego County Code of Regulatory Ordinances provided as Appendix G: Relevant Noise Regulations.

5.3.2 Summary of Site Specific Features Included in Cadna Model

Existing and proposed features at the project site that were included in the Cadna noise prediction model are listed in Table 7. These are considered to be permanent on-site features that affect natural noise propagation of noise sources to adjacent property lines.

Table 7. Summary of Site Features Included in Cadna Model	
Description	**Height**
Proposed Kenwood Apartment Building	Approximately 25-30 feet above grade
Proposed Property Perimeter Wood or Vinyl Perimeter Wall	6 feet above grade
Patio Wall	3 feet above grade

5.3.3 Proposed Mechanical Equipment Specifications

One outdoor condensing unit is proposed for installation in the patio area of each apartment unit. There will be 8 outdoor condensing units in total.

Table 8 summarizes the proposed mechanical equipment for the Kenwood Apartments Project. This information was provided for our attention by Mr. Edison Gan, Architect at Schuss Clark, Inc. on April 26, 2007 via electronic mail and represents the most current information available on the proposed mechanical equipment.

Table 8. RUUD Mechanical Specifications and Noise Emission Data			
Symbol	**Model Number**	**Number of Units**	**Sound Power Level, A-Weighted (dB)**
n/a	13AJA60	8	77

According to Mr. Edison Gan, a decision on the specific model of RUUD 13AJA Series HVAC Condensing Unit to be used in the project has not been reached. Our mechanical noise impact evaluation was conducted with information based on the manufacturer's published performance data on the RUUD 13AJA60 model, the noisiest model in the 13AJA Series of condensing units to simulate the worst-case scenario. This condensing unit has a published ARI Standard Sound Rating of 77 decibels.

For more details of the mechanical equipment used in this project please refer to Appendix H: Mechanical Equipment Noise Data.

5.3.4 Calculated Noise Levels for Model Comparison

In order to validate the results of the Cadna noise prediction model, the noise impacts from the worst-case RUUD 13AJA60 units were estimated by accounting only for attenuation by distance. This was done for each source-receiver pair. These values were compared to those predicted by Cadna. This data is summarized in Table 9.

Table 9. Calculated Noise Levels for Model Comparison						
Noise Source	**Receiver**	**Location**	**Distance from Source (ft)**	**Calculated Noise Level[1] (dBA)**	**Cadna Model Noise Level[2] (dBA)**	**Difference (dB)**
Unit 1 HVAC	R1	North Property Line	145.4	33.1	23.2	-9.9
	R2	East Property Line	102.0	36.1	28.4	-7.7
	R3	East Property Line	58.8	40.9	34.7	-6.2
	R4	East Property Line	96.9	36.6	42.1	5.5
	R5	South Property Line	142.9	33.2	36.4	3.2
	R6	West Property Line	108.0	35.7	10.7	-25.0
Unit 2 HVAC	R1	North Property Line	121.3	34.6	23.1	-11.5
	R2	East Property Line	78.5	38.4	27.6	-10.8
	R3	East Property Line	47.7	42.7	34.6	-8.1
	R4	East Property Line	78.7	38.4	39.9	1.5
	R5	South Property Line	124.3	34.4	34.0	-0.4
	R6	West Property Line	102.1	36.1	11.6	-24.5
Unit 3 HVAC	R1	North Property Line	108.2	35.6	24.6	-11.0
	R2	East Property Line	65.8	39.9	29.8	-10.1
	R3	East Property Line	36.8	45.0	38.3	-6.7
	R4	East Property Line	75.9	38.7	37.7	-1.0
	R5	South Property Line	121.3	34.6	31.6	-3.0
	R6	West Property Line	97.8	36.5	11.9	-24.6
Unit 4 HVAC	R1	North Property Line	105.2	35.9	27.5	-8.4
	R2	East Property Line	63.0	40.3	34.1	-6.2
	R3	East Property Line	31.5	46.4	40.7	-5.7
	R4	East Property Line	63.0	40.3	33.4	-6.9

Table 9. Calculated Noise Levels for Model Comparison						
Noise Source	**Receiver**	**Location**	**Distance from Source (ft)**	**Calculated Noise Level[1] (dBA)**	**Cadna Model Noise Level[2] (dBA)**	**Difference (dB)**
	R5	South Property Line	107.9	35.7	30.2	-5.5
	R6	West Property Line	95.8	36.7	12.0	-24.7
Unit 5 HVAC	R1	North Property Line	81.1	38.1	27.0	-11.1
	R2	East Property Line	40.6	44.1	33.9	-10.2
	R3	East Property Line	29.2	47.0	41.7	-5.3
	R4	East Property Line	40.7	44.1	34.1	-10.0
	R5	South Property Line	83.8	37.8	27.6	-10.2
	R6	West Property Line	95.1	36.8	12.1	-24.7
Unit 6 HVAC	R1	North Property Line	67.8	39.7	28.2	-11.5
	R2	East Property Line	29.5	46.9	36.8	-10.1
	R3	East Property Line	26.4	47.9	39.5	-8.4
	R4	East Property Line	38.0	44.7	31.2	-13.5
	R5	South Property Line	80.9	38.2	25.9	-12.3
	R6	West Property Line	94.4	36.8	11.8	-25.0
Unit 7 HVAC	R1	North Property Line	64.8	40.1	31.6	-8.5
	R2	East Property Line	27.3	47.6	40.0	-7.6
	R3	East Property Line	24.5	48.5	36.5	-12.0
	R4	East Property Line	27.5	47.5	28.0	-19.5
	R5	South Property Line	67.8	39.7	25.5	-14.2
	R6	West Property Line	93.7	36.9	11.8	-25.1
Unit 8 HVAC	R1	North Property Line	46.4	43.0	36.2	-6.8
	R2	East Property Line	19.1	50.7	42.3	-8.4
	R3	East Property Line	21.0	49.9	33.2	-16.7

Table 9. Calculated Noise Levels for Model Comparison						
Noise Source	**Receiver**	**Location**	**Distance from Source (ft)**	**Calculated Noise Level[1] (dBA)**	**Cadna Model Noise Level[2] (dBA)**	**Difference (dB)**
	R4	East Property Line	19.6	50.5	27.0	-23.5
	R5	South Property Line	43.7	43.5	23.5	-20.0
	R6	West Property Line	92.9	37.0	11.3	-25.7

[1] Calculated as attenuation by distance only using the formula, $L_P = L_W - 20\log(r/r_o) - 11$ where r_o = 1m
[2] As predicted by Cadna model

The noise level differences between the manually calculated and Cadna-generated results range from -25.7 to 5.5 dB. These differences in noise impacts at receiver locations are attributable to considerations in Cadna for ground absorption and the location of existing and proposed structures such as the proposed 3-foot tall patio walls, the 6-foot tall wood or vinyl perimeter wall and the 2-story building itself.

5.3.5 Mechanical Noise Impact

Based on the project information available, calculations show that without additional mitigation measures, the proposed mechanical installation for the Kenwood Apartment project will exceed the maximum allowable noise levels along the eastern property line established in the San Diego County Code of Regulatory Ordinances, Section 36.404.

The combined HVAC equipment noise impact from the proposed Kenwood Apartments project will be as high as 47.4 dBA L_{EQ} at the eastern property line, at the worst-case location. Mitigation is required in order to contain mechanical equipment noise to levels within County noise limits.

A 6-foot tall wood or vinyl perimeter wall is already proposed. By increasing its height above finished grade to 7.5 feet along the northern and eastern property limits, calculations show that mechanical noise impacts at relevant property lines will be reduced to levels conforming with County regulations. Please refer to Section 5.3.6 for information on Acoustic Barrier Construction.

Table 10 shows the calculated mechanical noise impacts, with and without the recommended mitigation, at relevant property lines as well as the applicable maximum allowable noise limits contained in the San Diego County Code of Regulatory Ordinances for the most noise-restrictive land use applicable to each property line.

Table 10: Projected Noise Impacts from Mechanical Equipment at Relevant Property Lines				
Relevant Property Line – Receiver #	Land Use	San Diego County Nighttime Maximum Permissible Noise Levels (dBA)	Noise Impact, L_{EQ} (dBA)	
			With No Mitigation	With Mitigation
North – R1	Residential	45	39.0	36.0
East – R2	Residential	45	45.9	42.7
East – R3	Residential	45	47.4	44.1
East – R4	Residential	45	46.0	43.0
South – R5	Residential	45	40.4	40.4
West – R6	Residential	45	20.7	20.7

For details of the acoustical calculations, please refer to Appendix I: Cadna Analysis Data and Results. Please also refer to Figure 10: Site Plan Showing Mechanical Noise Impacts at Property Line Receiver Locations with No Mitigations and Figure 11: Site Plan Showing Mechanical Noise Impacts at Property Line Receiver Locations with Mitigations.

This analysis is based upon a worst-case scenario of proposed mechanical equipment for the facility as outlined in mechanical plan excerpts, submitted for our review by Mr. Edison Gan, Architect at Schuss Clark, Inc. on April 26, 2007. Substitution of equipment with higher noise emission levels may invalidate the recommendations of this study.

These conclusions and recommendations are based on the most up-to-date, project-related information available. However, noise characteristics of mechanical equipment may vary for specific installations. Verification of compliance with County of San Diego noise regulations can be provided, if desired, by conducting a noise survey consisting of sound level measurements at or close to the nearest impacted locations in each direction, after the project is built and in operation. This is best accomplished in the late night or very early morning hours while the equipment is in full operation and other ambient noise sources are minimized. If any additional sound attenuation is found to be necessary, it can be specified at that time.

5.3.6 Acoustic Barrier Construction

A sound attenuation barrier should be a single, solid sound wall. The sound attenuation barrier height should be based on the site's finish grade elevation. The sound attenuation barrier should be solid and constructed of masonry, wood, plastic, fiberglass, steel, or a combination of those materials, with no cracks or gaps through the structure anywhere along or underneath the wall.

Any seams or cracks must be filled or caulked. If wood is used, it can be tongue and groove and must be at least one-inch thick or have a surface density of at least 3½ pounds per square foot. Glass or clear plastic may be used on the upper sections, for the aesthetic advantages offered by their transparent properties. Sheet metal of 18-gauge thickness at a minimum may be used, if properly supported and stiffened so that it does not rattle or create noise itself from wind-induced vibration. Any gates present in a sound wall must be designed with overlapping closures on the bottom and sides and meet the minimum specifications of the wall materials described above.

6.0 CERTIFICATION

All recommendations for noise control are based on the best information available at the time our consulting services are provided. However, as there are many factors involved in sound and impact transmission, and Eilar Associates has no control over the construction, workmanship or materials, Eilar Associates is specifically not liable for final results of any recommendations or implementation of the recommendations.

The findings and recommendations of this acoustical analysis report are based on the information available and are a true and factual analysis of the potential acoustical issues associated with the Kenwood Apartment project in the community of Spring Valley, California. This report was prepared by David So, Michael Burrill, and Douglas Eilar.

David So, Acoustical Consultant

Michael Burrill, Senior Acoustical Consultant

Douglas Eilar

7.0 REFERENCES

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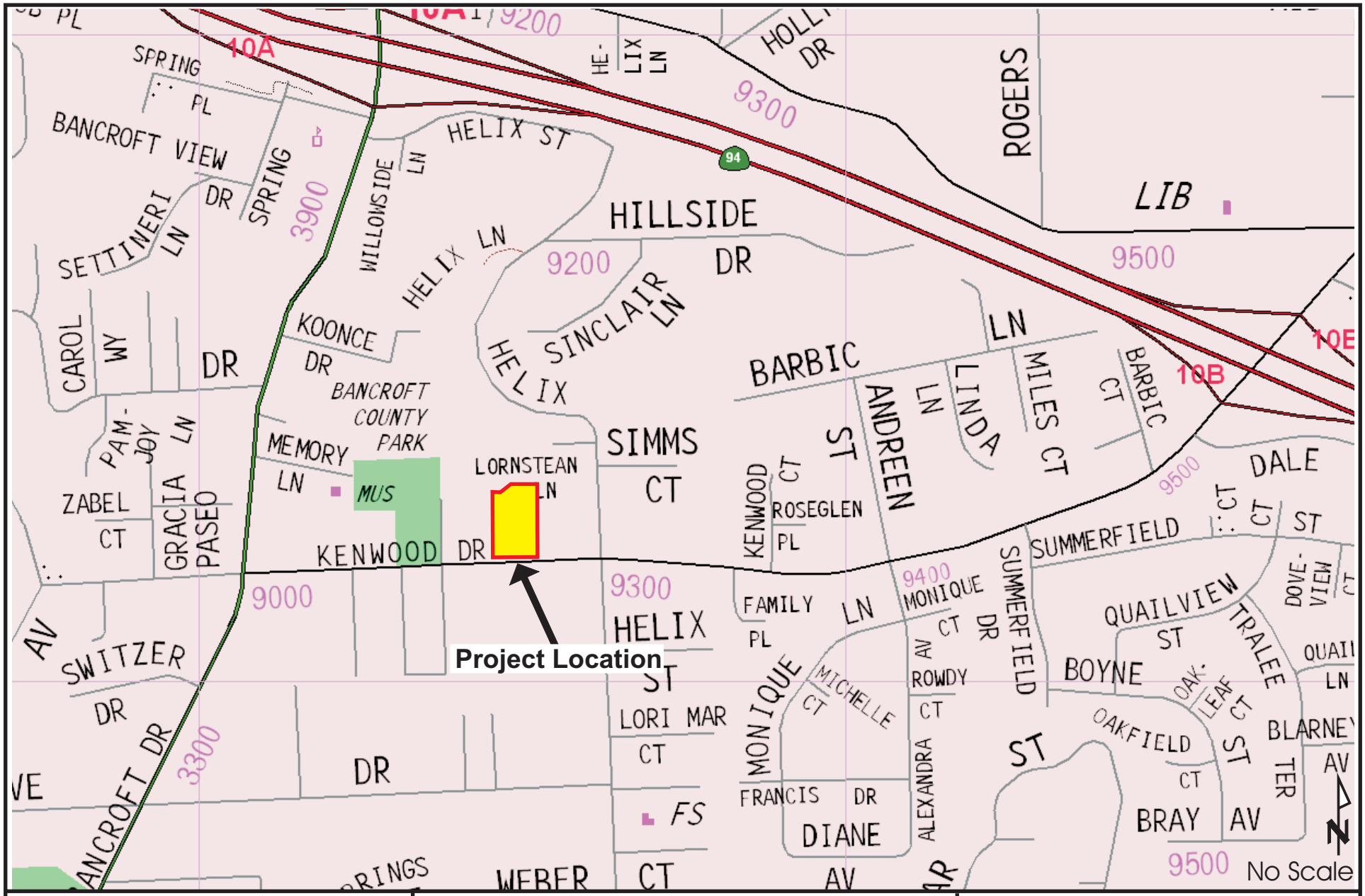
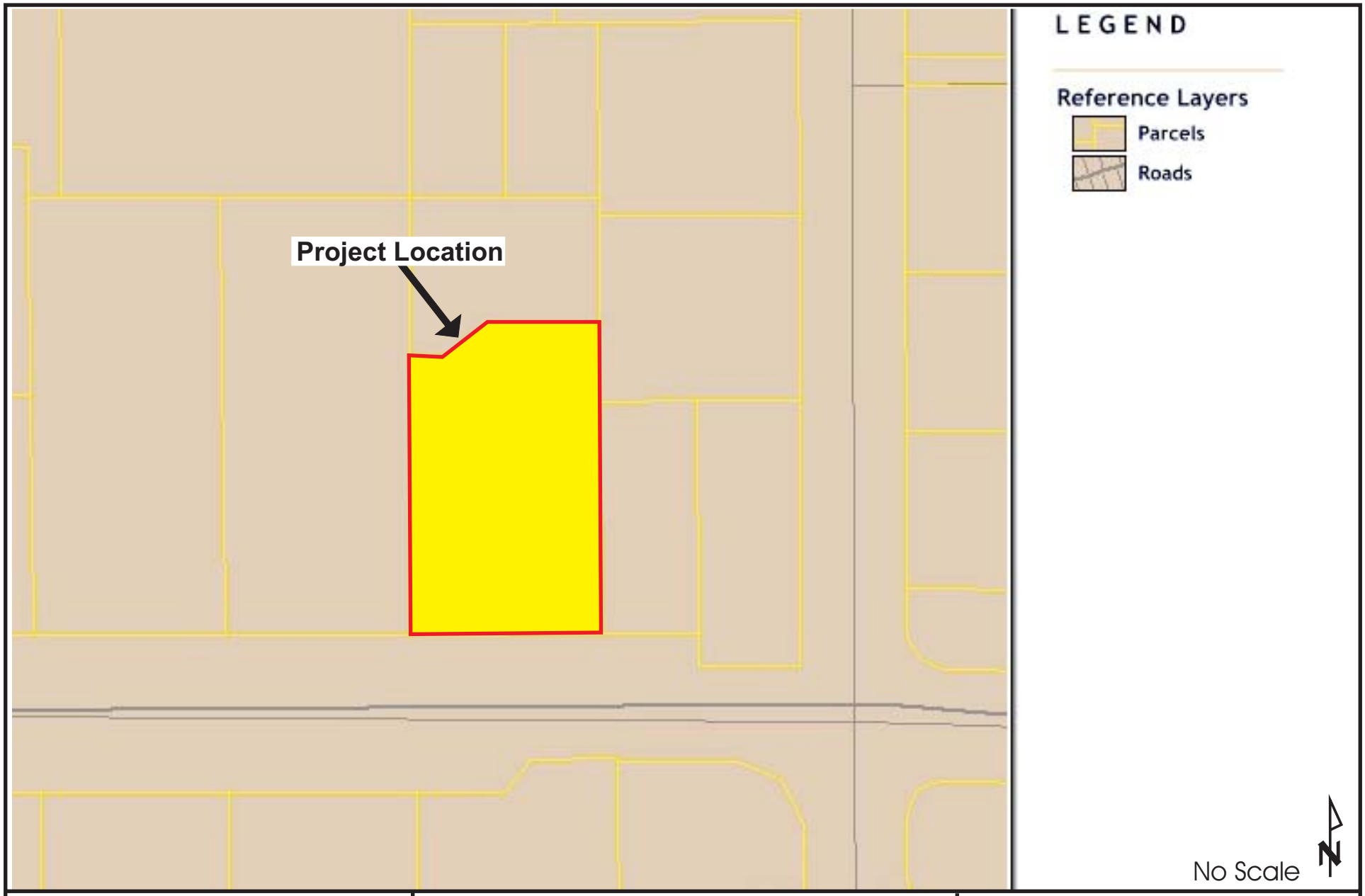
FIGURES

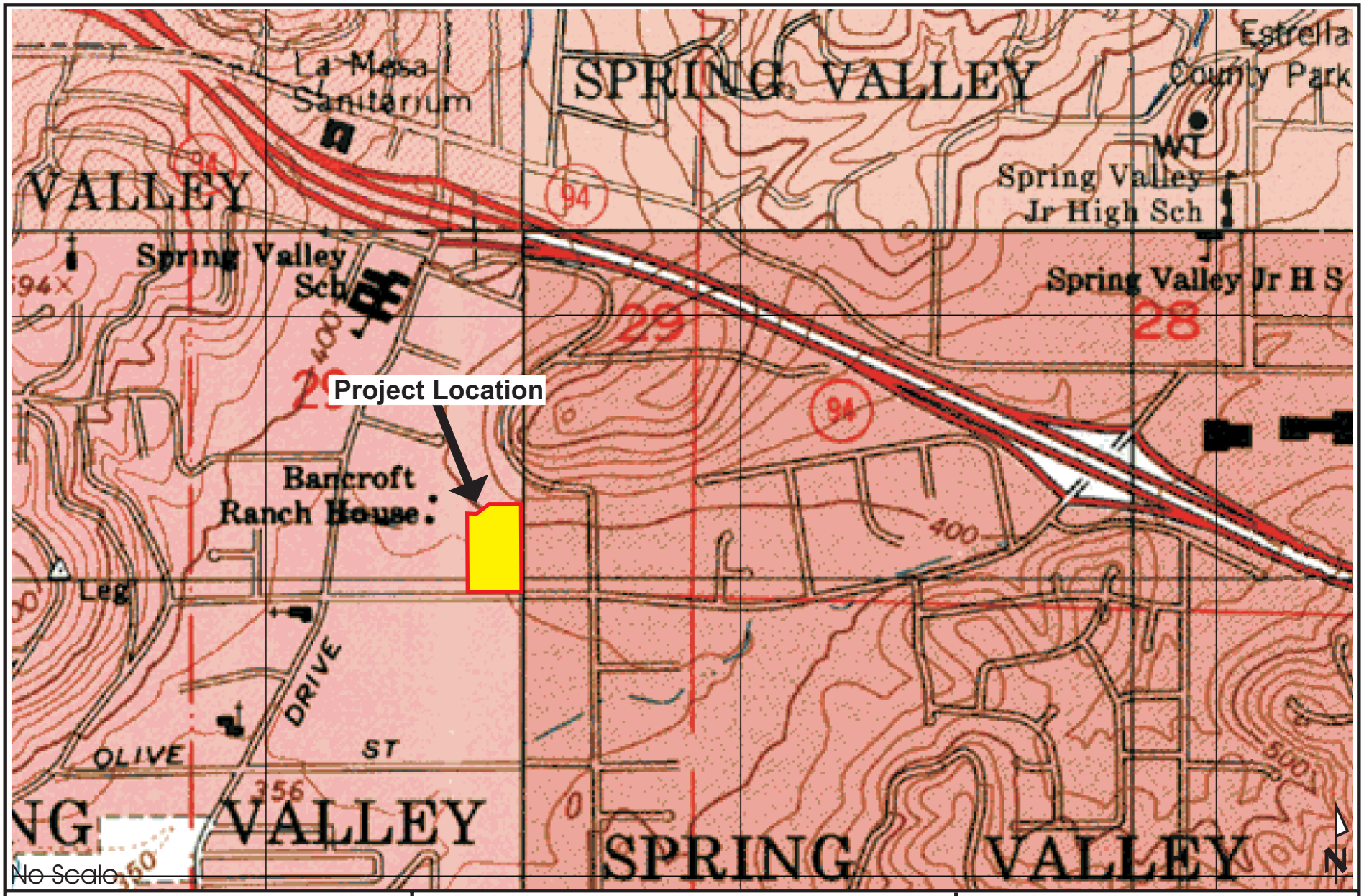


Eilar Associates **539 Encinitas Boulevard, Suite 206** **Encinitas, California 92024** **760-753-1865**	**Vicinity Map** **Job # A61042N2**	**Figure 1**

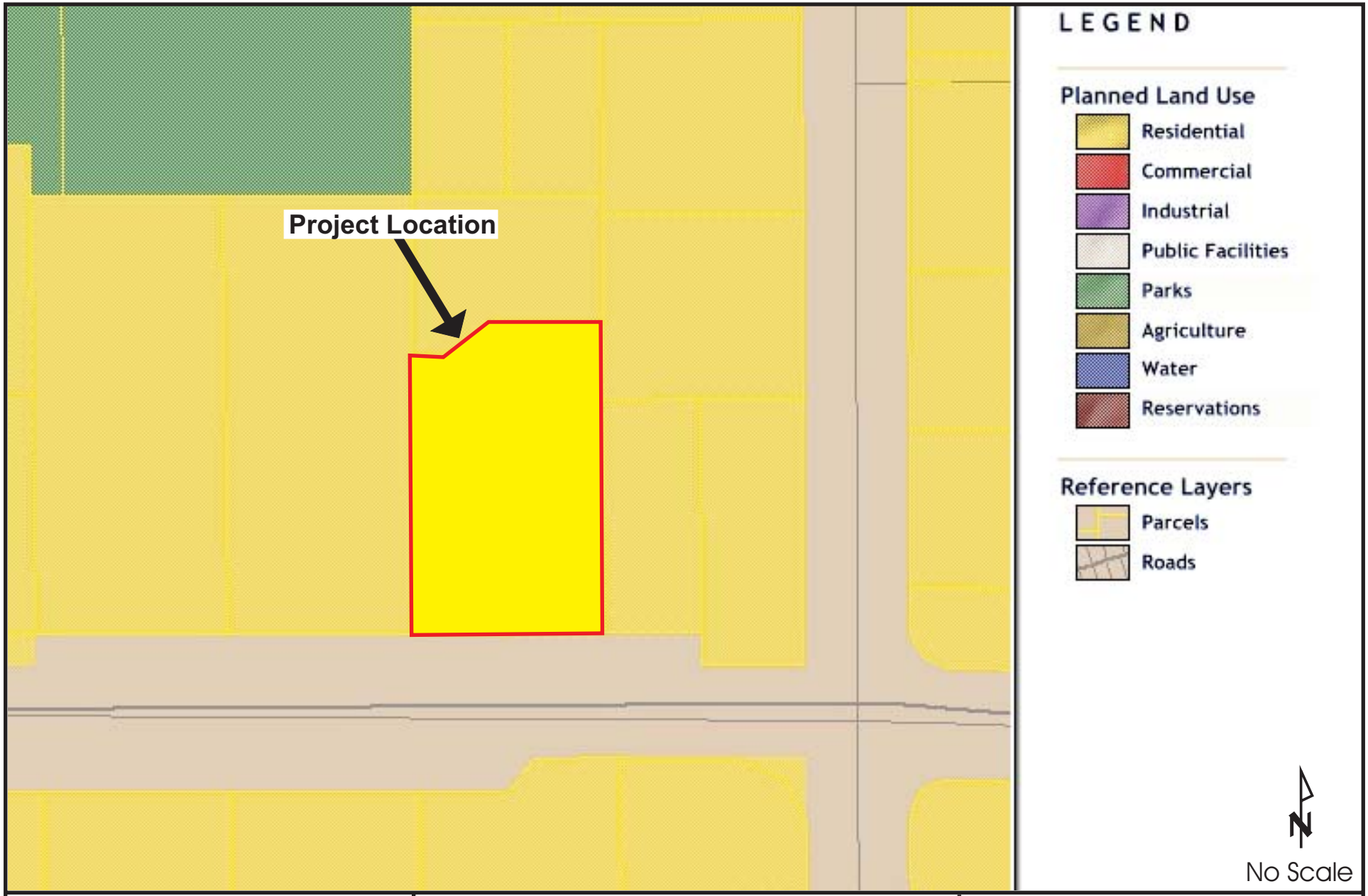


Eilar Associates **539 Encinitas Boulevard, Suite 206** **Encinitas, California 92024** **760-753-1865**	**Assessor's Parcel Map** **Job # A61042N2**	**Figure 2**

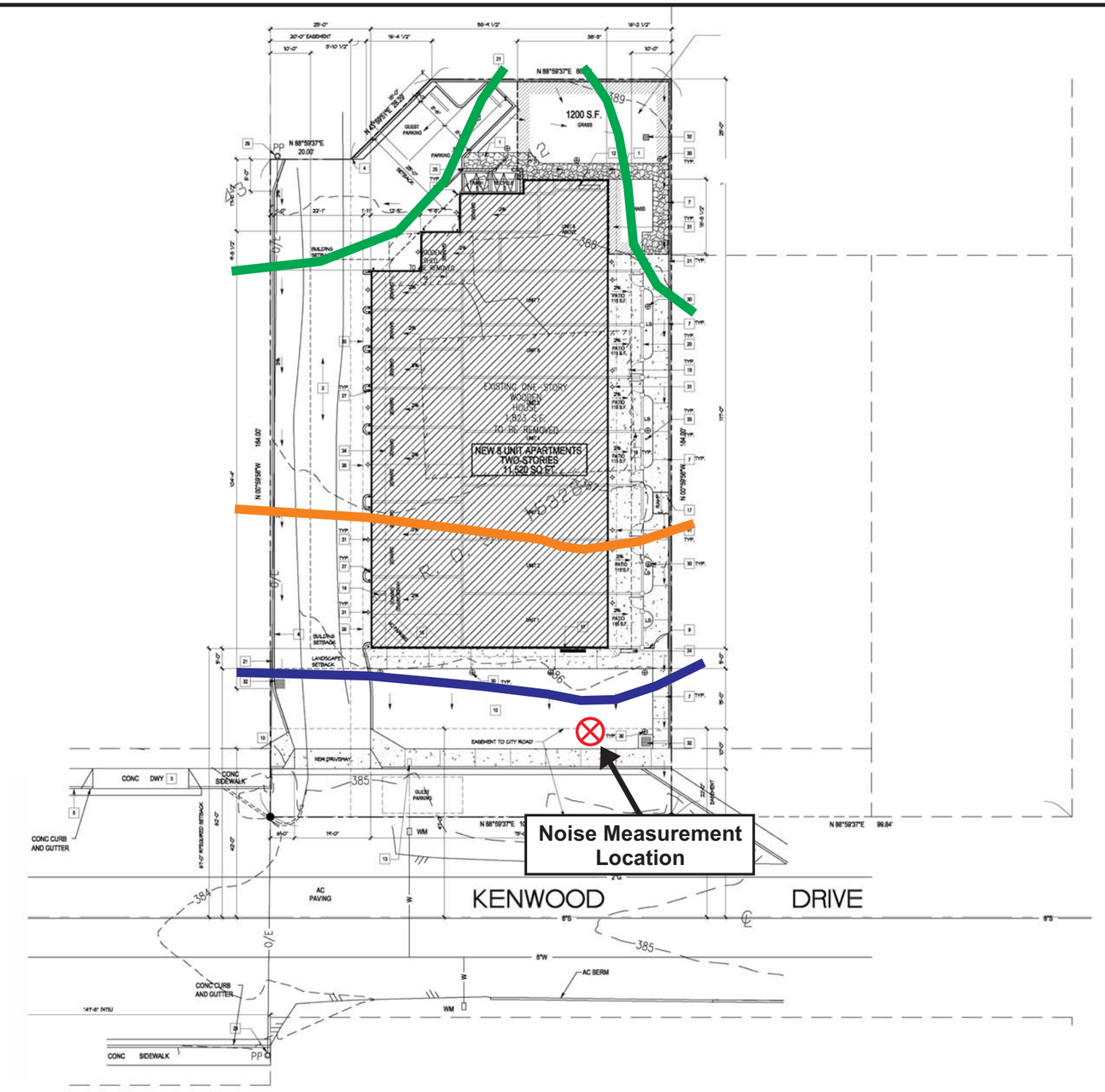
Eilar Associates **539 Encinitas Boulevard, Suite 206** **Encinitas, California 92024** **760-753-1865**	**Satellite Aerial Photograph** **Job # A61042N2**	**Figure 3**



Eilar Associates 539 Encinitas Boulevard, Suite 206 Encinitas, California 92024 760-753-1865	Topographic Map Job # A61042N2	Figure 4

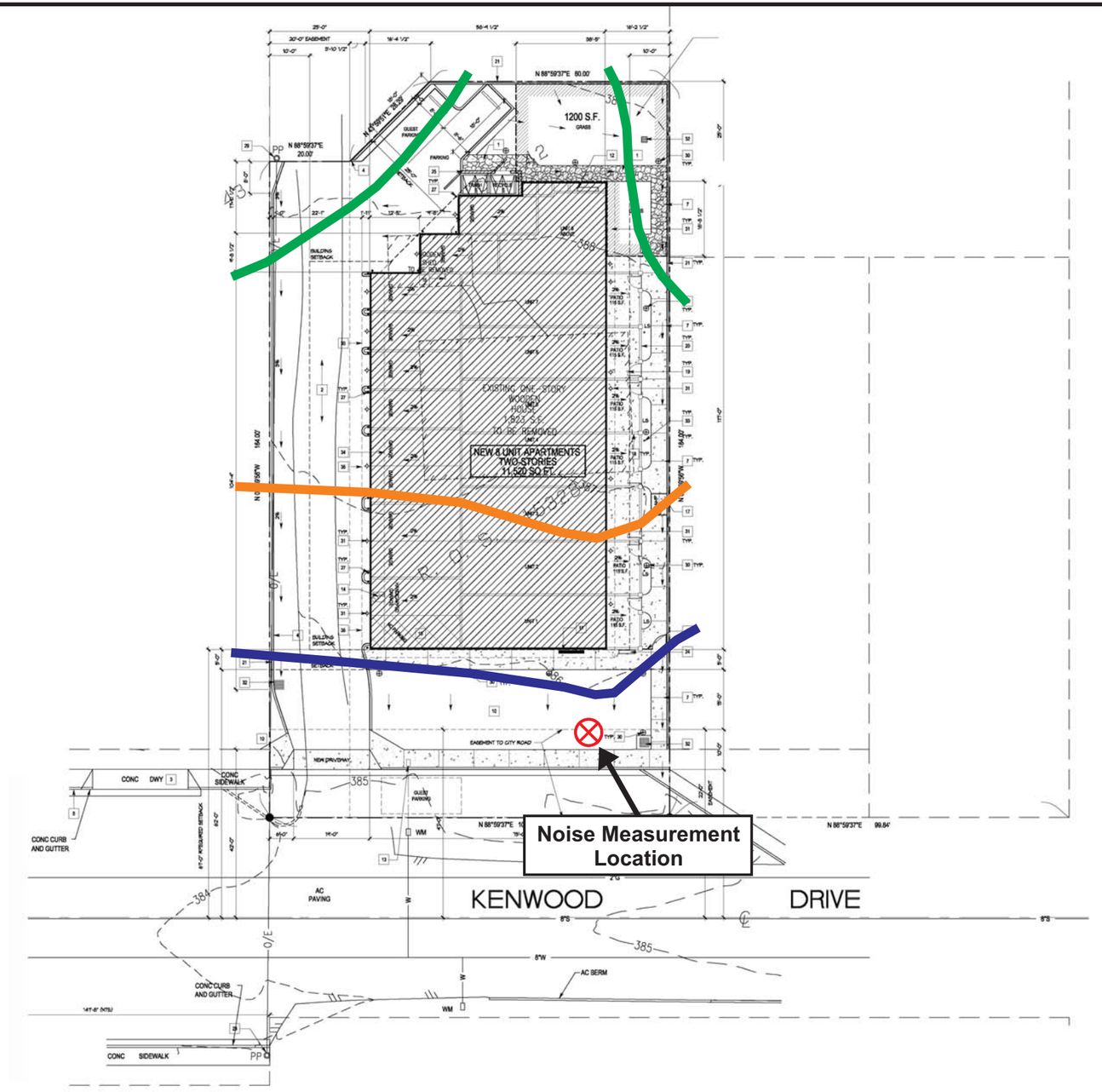


Eilar Associates **539 Encinitas Boulevard, Suite 206** **Encinitas, California 92024** **760-753-1865**	**Planned Land Use Map** **Job # A61042N2**	**Figure 5**



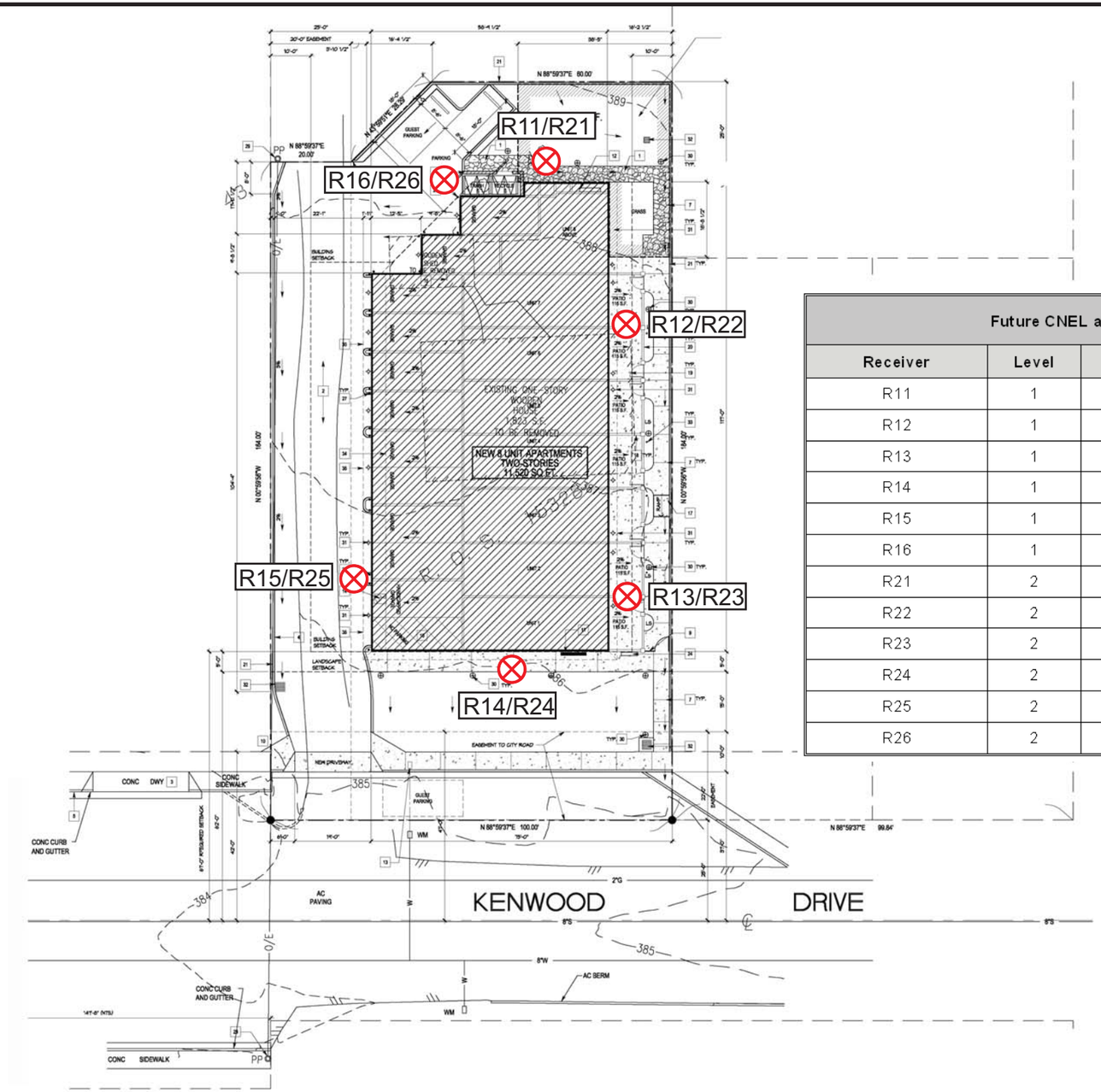
No Scale

Eilar Associates **539 Encinitas Boulevard, Suite 206** **Encinitas, California 92024** **760-753-1865**	**Site Plan Showing Current Traffic CNEL Contours and Noise Measurement Location** **Job # A61042N2**	**Figure 6**



No Scale

Eilar Associates **539 Encinitas Boulevard, Suite 206** **Encinitas, California 92024** **760-753-1865**	**Site Plan Showing Future Traffic CNEL Contours and Noise Measurement Location** **Job # A61042N2**	**Figure 7**



Future CNEL at Proposed Building Facades			
Receiver	**Level**	**Receiver Location**	**Exterior CNEL**
R11	1	North Façade	50.2
R12	1	East Façade	50.7
R13	1	East Façade	56.2
R14	1	South Façade	64.7
R15	1	West Façade	58.4
R16	1	West Façade	49.0
R21	2	North Façade	54.9
R22	2	East Façade	57.6
R23	2	East Façade	60.9
R24	2	South Façade	66.0
R25	2	West Façade	61.7
R26	2	West Façade	52.5

No Scale

N

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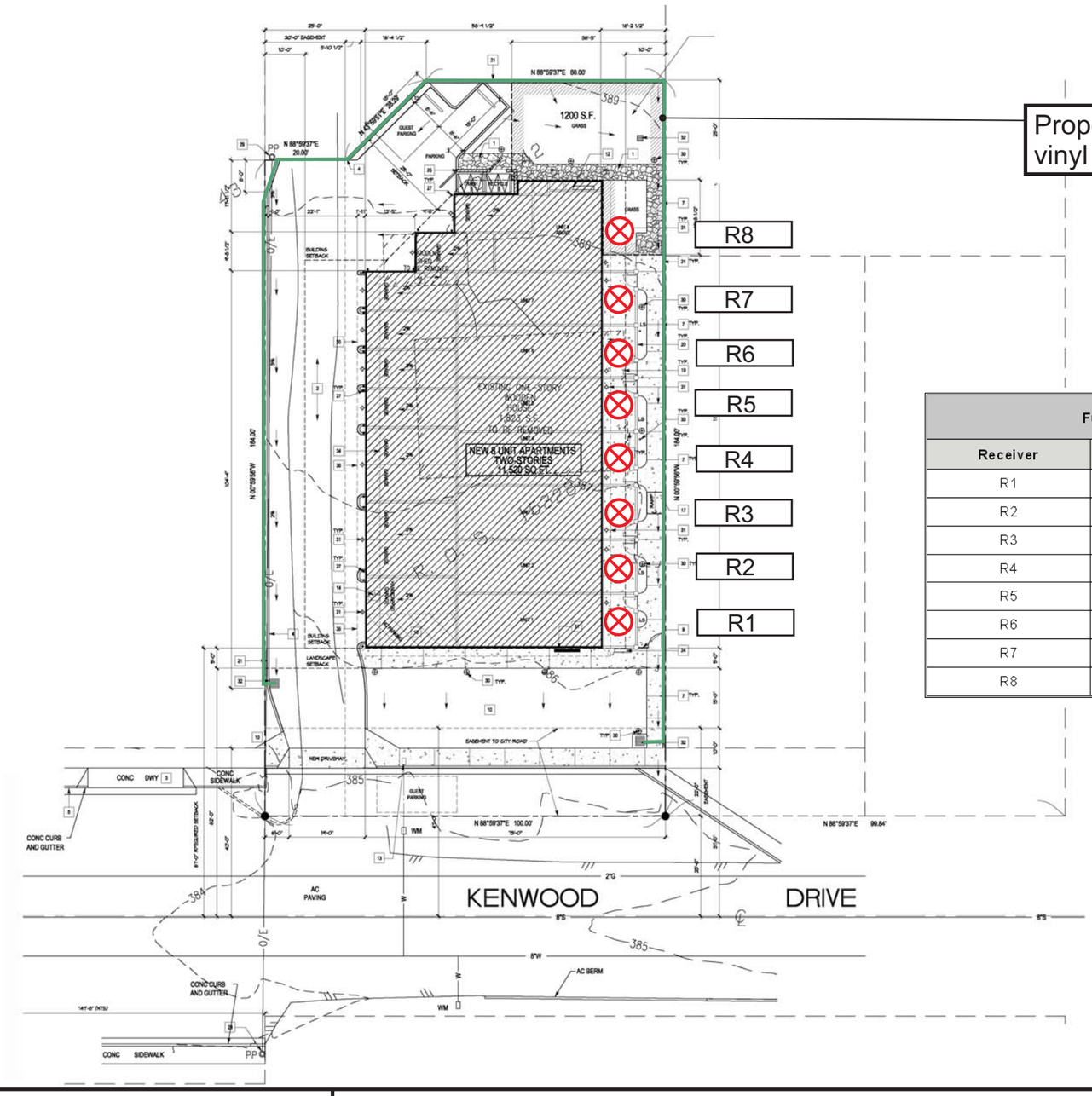
Site Plan Showing Future CNEL at Exterior Building Facades
Job # A61042N2

Figure 8



Future CNEL at Proposed Outdoor Use Spaces			
Receiver	Level	Receiver Location	Exterior CNEL
R1	1	Unit 1 Patio	59.0
R2	1	Unit 2 Patio	54.5
R3	1	Unit 3 Patio	52.2
R4	1	Unit 4 Patio	51.1
R5	1	Unit 5 Patio	51.6
R6	1	Unit 6 Patio	50.4
R7	1	Unit 7 Patio	50.7
R8	1	Unit 8 Exterior/ Common Use	51.3

No Scale

N

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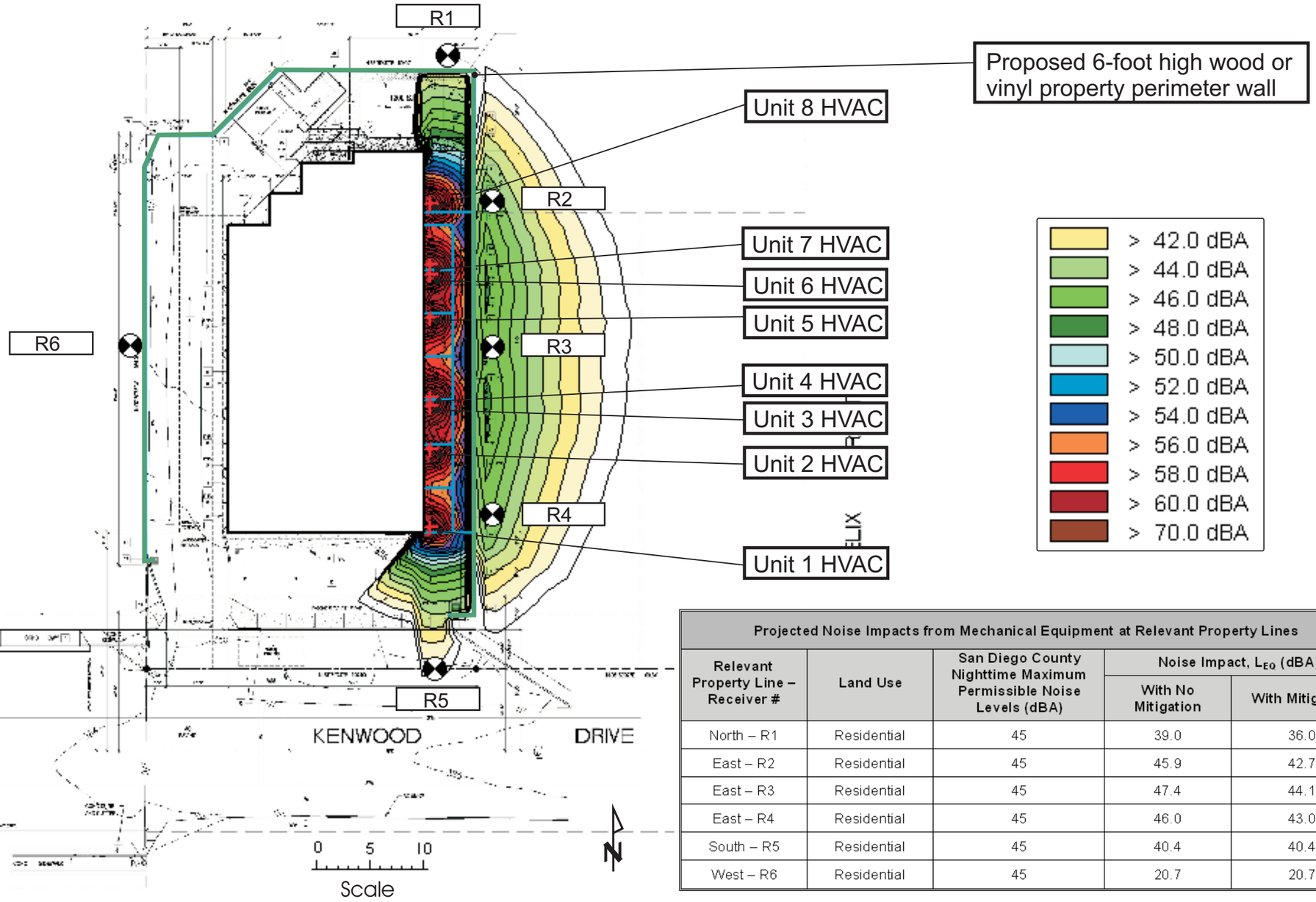
Site Plan Showing Future CNEL at Outdoor Useable Spaces
Job # A61042N2

Figure 9



Projected Noise Impacts from Mechanical Equipment at Relevant Property Lines				
Relevant Property Line – Receiver #	Land Use	San Diego County Nighttime Maximum Permissible Noise Levels (dBA)	Noise Impact, L_{EQ} (dBA)	
			With No Mitigation	With Mitigation
North – R1	Residential	45	39.0	36.0
East – R2	Residential	45	45.9	42.7
East – R3	Residential	45	47.4	44.1
East – R4	Residential	45	46.0	43.0
South – R5	Residential	45	40.4	40.4
West – R6	Residential	45	20.7	20.7

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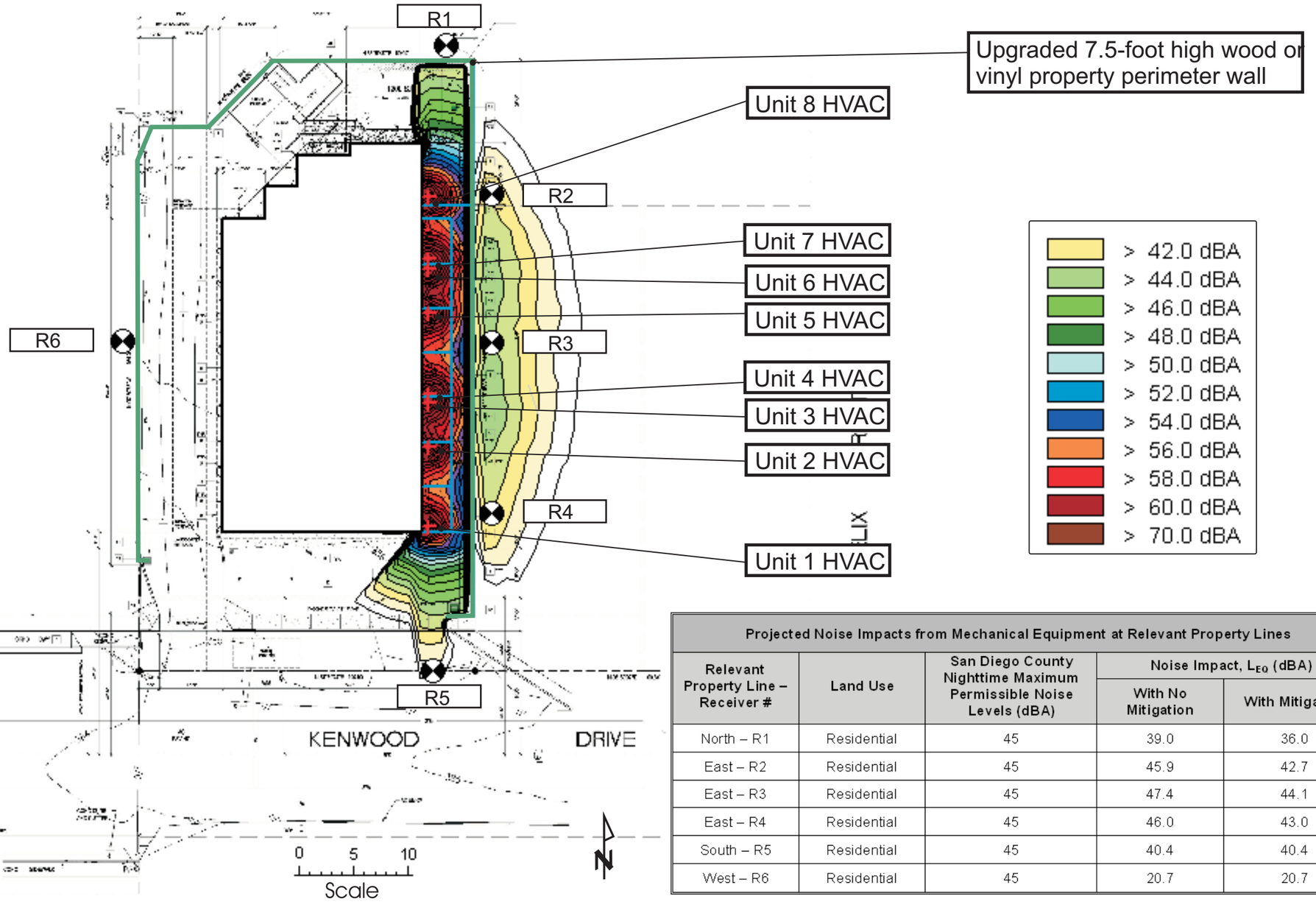
Site Plan Showing Mechanical Noise Impacts at Property Line
Receiver Locations with No Mitigation
Job # A61042N2

Figure 10



Projected Noise Impacts from Mechanical Equipment at Relevant Property Lines				
Relevant Property Line – Receiver #	Land Use	San Diego County Nighttime Maximum Permissible Noise Levels (dBA)	Noise Impact, L_{EQ} (dBA)	
			With No Mitigation	With Mitigation
North – R1	Residential	45	39.0	36.0
East – R2	Residential	45	45.9	42.7
East – R3	Residential	45	47.4	44.1
East – R4	Residential	45	46.0	43.0
South – R5	Residential	45	40.4	40.4
West – R6	Residential	45	20.7	20.7

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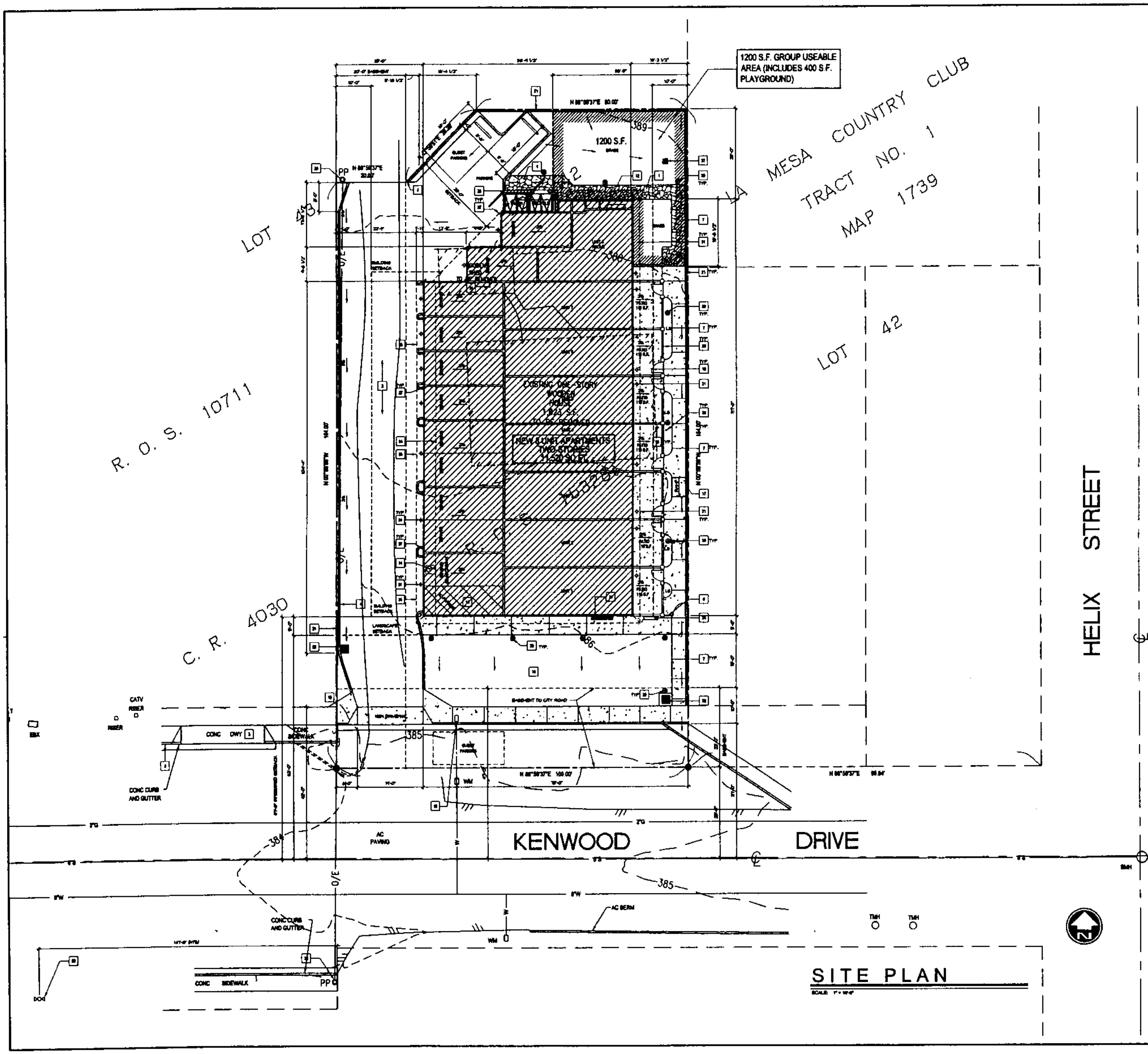
Site Plan Showing Mechanical Noise Impacts at Property Line
Receiver Locations with Mitigation
Job # A61042N2

Figure 11

APPENDIX A

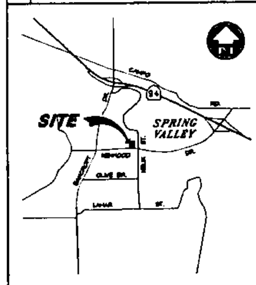
Excerpts of Architectural Plans



SITE PLAN

SCALE: 1" = 10'-0"

VICINITY MAP



SITE DATA

SITE ADDRESS:	9250 KENWOOD DRIVE SPRING VALLEY, CA 91977
APN:	[illegible]
COMMUNITY PLAN:	SPRING VALLEY
GENERAL PLAN DESIGNATION:	[illegible]
REGIONAL CATEGORY:	[illegible]
ZONE:	[illegible]
LOT AREA =	[illegible] SQ.FT. [illegible] ACRES
MAX. HEIGHT =	[illegible] FEET
MAX. STORIES =	TWO STORIES
SETBACK AREA =	FRONT YARD: [illegible] FEET TO C.L. OF ST.; SIDE YARD (INT.): [illegible] FEET; SIDE YARD (EXT.): [illegible] FEET; REAR YARD: [illegible] FEET
EXISTING BUILDING AREA =	TO BE REMOVED
BUILDING AREA =	1ST FLOOR: LIVING FLOOR AREA [illegible] S.F.; GARAGE FLOOR AREA [illegible] S.F.; TOTAL 1ST FLOOR [illegible] S.F.; TOTAL 2ND FLOOR [illegible] S.F.
TOTAL BUILDING FLOOR AREA	11,520 S.F.
PARKING REQUIRED =	1.5 PARKING SPACES PER DWELLING UNIT; [illegible] UNITS / 1.5 = 12 SPACES; GUEST PARKING = 2 SPACES
PARKING PROVIDED =	GARAGES = [illegible] SPACES INCL. DISABLED PARKING; GUEST PARKING (OFF-STREET) = 2 SPACE; GUEST PARKING (ON-STREET) = 1 SPACE; 14 SPACES

SITE KEY NOTES

1. FLAGSTONE PAVING
2. A/C PAVING (SEE CIVIL DWGS/SOILS REPORT FOR SPECS.)
3. EXISTING DRIVEWAY TO REMAIN.
4. CONCRETE CURB PER DETAIL [illegible]
5. EXISTING CURB, GUTTER AND SIDEWALK TO REMAIN.
6. CONCRETE WHEEL STOPS PER DETAIL [illegible]
7. CONC. CURB / WALK W/ CONTROL JT. SEE DETAIL [illegible]
8. NEW PLANTER CURBS SEE DETAIL [illegible]
9. [illegible] HIGH W.I. RAILING WITH [illegible] SWING GATE
10. LANDSCAPE AREA. SEE LANDSCAPE PLANS.
11. GAS METER LOCATION AND SERVICE LINE TO BUILDING. SEE PLUMBING PLAN.
12. ELECTRICAL SWITCHGEAR LOCATION. SEE ELECTRICAL PLAN
13. RELOCATE EXISTING WATER METER. SEE PLUMBING PLAN.
14. DISABLED SYMBOL - WHITE ON BLUE BACKGROUND. SEE DETAIL [illegible]
15. DISABLED ACCESSIBLE SIGN [illegible]
16. [illegible] WIDE ACCESS AISLE.
17. CONCRETE CURB RAMP. SEE DETAIL [illegible]
18. [illegible] HIGH STUCCO WALL SEPARATION
19. [illegible] HIGH W.I. SWING GATE
20. [illegible] HIGH STUCCO WALL WITH [illegible] W.I. RAILING ABOVE
21. [illegible] HIGH VINYL OR WOOD FENCE
22. DISABLED ACCESS PATH OF TRAVEL.
23. EXISTING FIRE HYDRANT LOCATION
24. MAIL BOX LOCATION
25. [illegible] HIGH CONCRETE TRASH ENCLOSURE. SEE DETAIL [illegible]
26. LINE OF 2 FOOT VEHICLE OVERHANG.
27. CONCRETE PIPE BOLLARD SEE DETAIL [illegible]
28. EXISTING SEWER LATERAL VERIFY EXACT LOCATION.
29. EXISTING UTILITY POWER POLE TO REMAIN
30. SITE POLE [illegible] LIGHT FIXTURE PER ELECTRICAL PLAN
31. WALL MOUNTED [illegible] LIGHT FIXTURE PER ELECTRICAL PLAN
32. CATCH BASIN PER CIVIL PLAN
33. AREA DRAIN PER CIVIL PLAN
34. OUTLINE OF FLOOR LINE ABOVE
35. OUTLINE OF ROOF LINE ABOVE

SCHUSS · CLARK
AN ARCHITECTURAL CORPORATION

TONY ARCANGELI
[illegible] RANCHO BERNARDO ROAD, SUITE [illegible]
SAN DIEGO, CA [illegible]
(858) [illegible]

KENWOOD APARTMENTS

9250 KENWOOD DRIVE
SPRING VALLEY, CA 91977

Sheet Content: SITE PLAN

Sheet Number: AS1

KENWOOD APARTMENTS
9250 KENWOOD DRIVE
SPRING VALLEY, CA 91977

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A1

LOWER LEVEL FLOOR PLAN

GUEST PARKING

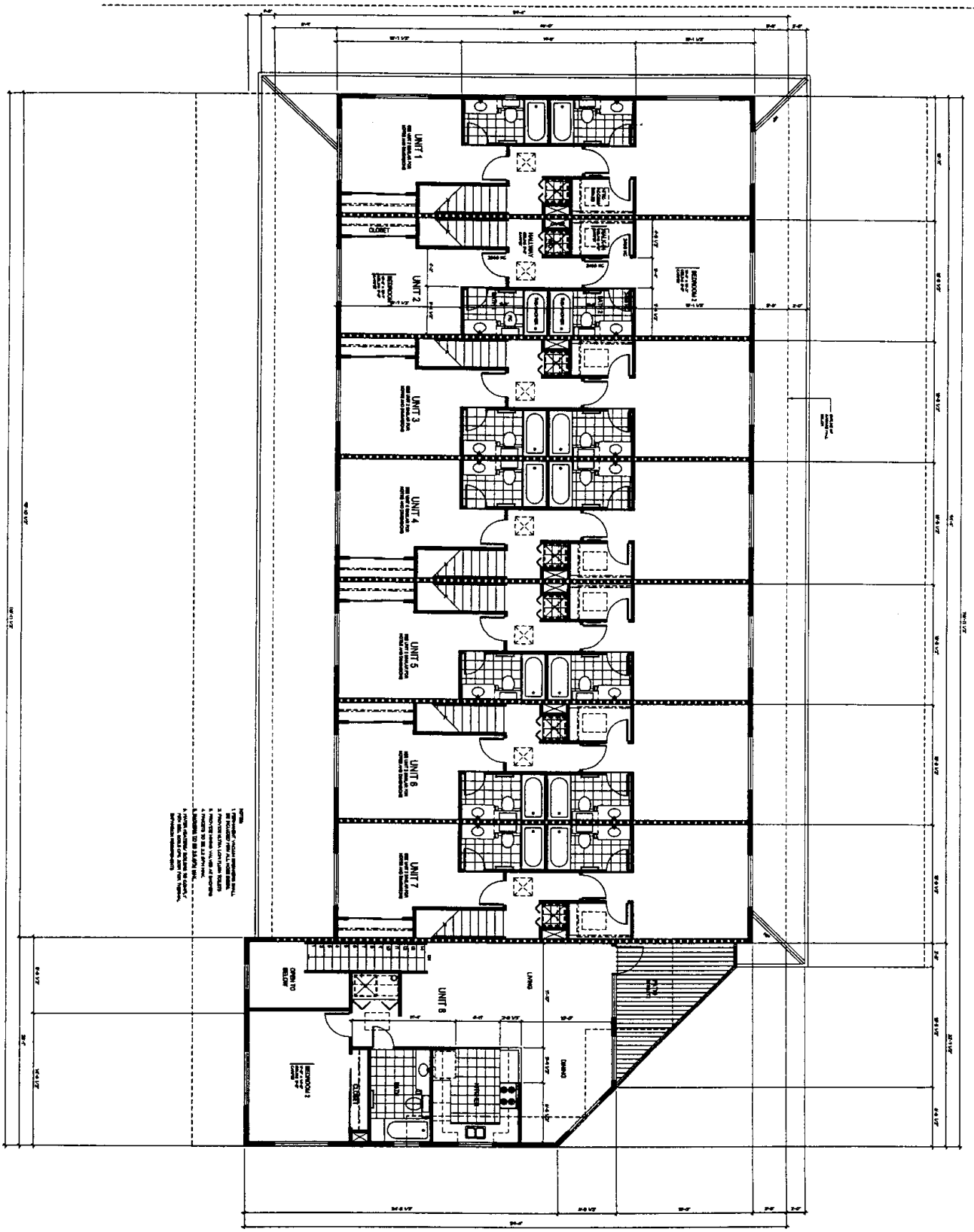
PARKING

HC PARKING

NO PARKING

UNIT AREA:

BUILDING AREA:



UPPER LEVEL FLOOR PLAN

A2

UPPER LEVEL FLOOR PLAN

KENWOOD APARTMENTS

9250 KENWOOD DRIVE
SPRING VALLEY, CA 91977

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EAST ELEVATION
WEST ELEVATION
KENWOOD APARTMENTS
9250 KENWOOD DRIVE
SPRING VALLEY, CA 91977
TONY ARCANGELI
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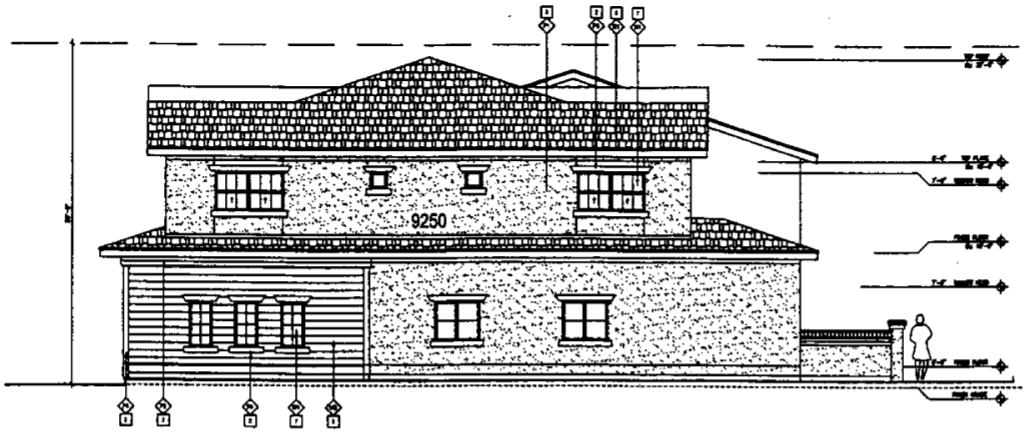
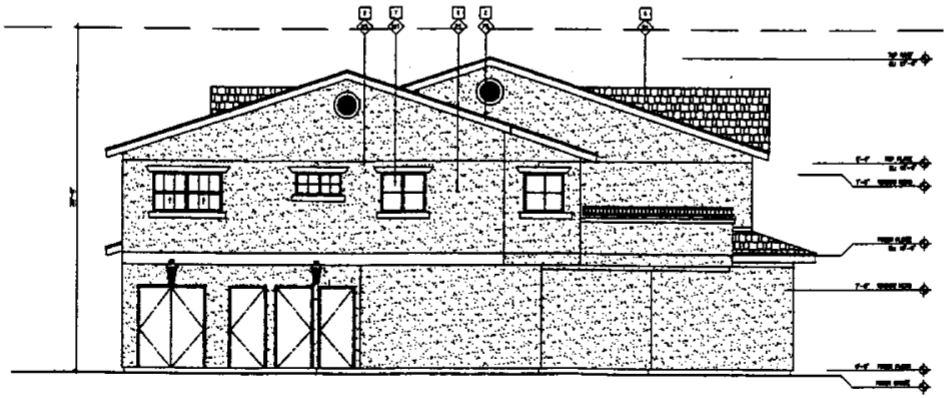
AN ARCHITECTURAL CORPORATION
A5



SOUTH ELEVATION



NORTH ELEVATION

SHEET NOTES

MATERIAL & COLOR

GENERAL NOTES

SYMBOL LEGEND

SCHUSS CLARK
AN ARCHITECTURAL CORPORATION

TONY ARCANGELI

KENWOOD APARTMENTS
9250 KENWOOD DRIVE
SPRING VALLEY, CA 91977

EXTERIOR ELEVATIONS

A4

APPENDIX B

Traffic Noise Model (TNM) Data and Results

Wile Laboratory AWT to Ave. Hourly Volume Conversion Factor 5.8%

Est. Vehicular % **Year 2030**

TOTAL	Autos	M. Trucks	H. Trucks	Street Name	Speed Limit (mph)	Projected AWT	Proj. Autos (per hour)	Proj. M. Trucks (per hour)	Proj. H. Trucks (per hour)
100%	92	7	1	Kenwood EB	40	4000	213	16	2
100%	92	7	1	Kenwood WB	40	4000	213	16	2
100%	91	7	2	Helix NB	30	2000	106	8	2
100%	91	7	2	Helix SB	30	2000	106	8	2
100%	95	2.8	2.2	SR-94 EB	65	65000	3582	106	83
100%	95	2.8	2.2	SR-94 WB	65	68000	3747	110	87
0%									

Est. Vehicular % **Year 2000**

TOTAL	Autos	M. Trucks	H. Trucks	Street Name	projected AWT	Proj. Autos (per hour)	Proj. M. Trucks (per hour)	Proj. H. Trucks (per hour)
100%	92	7	1	Kenwood EB	35	4000	213	16	2
100%	92	7	1	Kenwood WB	35	4000	213	16	2
100%	91	7	2	Helix NB	25	2000	106	8	2
100%	91	7	2	Helix SB	25	2000	106	8	2
100%	95	2.8	2.2	SR-94 EB	65	41200	2270	67	53
100%	95	2.8	2.2	SR-94 WB	65	42600	2347	69	54
0%									

EILAR ASSOCIATES: Calibration to On-site Measurement

Prepared by: Dave So

Project Number: A61042N1
Project Name: Kenwood Apartment Project
Run Title: Calibration to On-site Measurement

Client Name: Flash Holdings Inc.
Attention: Antonio Arcangeli

Roadways		Points										
				Coordinates (pavement)			Flow Control			Segment		
Name	Width	Name	No.	x	y	z	Control Device	Speed Constraint	Percent Vehicles Affected	Pavement Type	On Struct?	
	ft			ft	ft	ft		mph	%			
Kenwood WB1	18	35	1	4025.5	1223.8	413.00				Average		
		31	2	3732.0	903.7	410.00				Average		
		27	3	3604.1	829.1	410.00				Average		
		23	4	3249.7	710.1	410.00				Average		
		19	5	2340.7	539.3	392.00				Average		
		15	6	2181.2	534.8	388.00				Average		
		15stop	7	1365.9	608.4	387.00						
Kenwood EB1	18	2	8	512.2	589.9	376.00				Average		
		2light	9	1320.4	590.8	387.00						
Helix SB	12	75	10	569.1	2368.9	407.00				Average		
		76	11	725.1	2447.6	410.00				Average		
		77	12	853.5	2468.0	410.00				Average		
		78	13	1254.5	2412.6	426.00				Average		
		79	14	1317.3	2379.1	434.00				Average		
		80	15	1350.8	2325.2	441.00				Average		
		81	16	1350.8	2243.5	449.00				Average		
		82	17	1285.2	2151.7	454.00				Average		
		83	18	939.5	1889.4	455.00				Average		
		84	19	849.1	1810.6	455.00				Average		
		85	20	782.0	1697.0	465.00				Average		
		86	21	735.4	1570.1	467.00				Average		
		87	22	741.2	1456.5	461.00				Average		
		88	23	777.9	1358.3	454.00				Average		
		89	24	856.6	1278.1	446.00				Average		
		90	25	989.3	1212.5	446.00				Average		
		91	26	1257.7	1152.8	437.00				Average		
		92	27	1300.0	1094.5	424.00				Average		
		93	28	1321.9	951.6	400.00				Average		
		93light	29	1334.0	623.8	387.00						
Helix NB	12	55	30	1369.9	-32.2	377.00				Average		
		55light	31	1352.0	575.4	387.00						
Rte 94 EB3	12	37	32	513.5	2658.0	411.00				Average		
		43	33	1981.7	2291.6	497.00				Average		
		49	34	3984.2	1325.8	413.00						
Rte 94 EB2	12	38	35	518	2674.9	412				Average		
		44	36	1986.1	2308.5	496				Average		
		50	37	3988.7	1342.7	413						
Rte 94 EB1	12	39	38	523.8	2692.2	412				Average		
		45	39	1991.9	2325.9	495				Average		
		51	40	3994.4	1360.1	413						
Rte 94 WB1	12	52	41	4025.9	1421.5	416				Average		
		46	42	1909.1	2419.6	484				Average		
		40	43	542	2762.2	413						
Rte 94 WB2	12	53	44	4033.5	1439	416				Average		
		47	45	1916.8	2437.2	483				Average		
		41	46	549.7	2779.8	413						
Rte 94 WB3	12	54	47	4038.2	1458.4	416				Average		
		48	48	1921.4	2456.5	482				Average		
		42	49	554.3	2799.1	413						
Kenwood WB1-2	18	point110	50	1365.9	608.4	387	Stop	0	100	Average		
		11	51	1350.9	608.4	387				Average		
		7	52	1334.9	608.8	387				Average		
		3	53	513.3	607.9	376						
Kenwood EB1-2	18	point111	54	1320.4	590.8	387	Stop	0	100	Average		
		6	55	1335.4	590.8	387				Average		
		10	56	1351.4	590.4	387				Average		
		14	57	2183.1	516.8	388				Average		
		18	58	2346.6	520.8	392				Average		
		22	59	3258.2	691	411				Average		
		26	60	3615.2	814.5	411				Average		
		30	61	3746.8	893	411				Average		

		34	62	4046	1215.9	413					
Helix NB-2	12	point113	63	1352	575.4	387	Stop	0	100	Average	
		10	64	1351.4	590.4	387				Average	
		11	65	1350.9	608.4	387				Average	
		56	66	1337.9	953.1	400				Average	
		57	67	1319.2	1099.3	424				Average	
		58	68	1270	1171.6	437				Average	
		59	69	990.6	1232.4	446				Average	
		60	70	867.5	1296	446				Average	
		61	71	795.1	1369.8	454				Average	
		62	72	760.6	1462.4	461				Average	
		63	73	753.4	1569.5	467				Average	
		64	74	798.2	1691	465				Average	
		65	75	866.3	1801	455				Average	
		66	76	953.1	1876.2	455				Average	
		67	77	1300.6	2139.6	454				Average	
		68	78	1373	2239.4	449				Average	
		69	79	1368.6	2329.1	441				Average	
		70	80	1329.5	2394.2	434				Average	
		71	81	1261.5	2431.8	426				Average	
		72	82	850.4	2488.2	410				Average	
		73	83	721.5	2468	410				Average	
		74	84	562.3	2388.4	407					
Helix SB-2	12	point114	85	1334	623.8	387	Stop	0	100	Average	
		7	86	1334.9	608.8	387				Average	
		6	87	1335.4	590.8	387				Average	
		94	88	1353.9	-32.2	377					

Roadways	Points											
Name	Name	No.	Segment									
			Autos		Mtrucks		Htrucks		Buses		Motorcycles	
			Volume	Speed	Volume	Speed	Volume	Speed	Volume	Speed	Volume	Speed
			veh/hr	mph								
Kenwood WB1	35	1	184	25	26	25	2	25	0	0	0	0
	31	2	184	35	26	35	2	35	0	0	0	0
	27	3	184	35	26	35	2	35	0	0	0	0
	23	4	184	35	26	35	2	35	0	0	0	0
	19	5	184	35	26	35	2	35	0	0	0	0
	15	6	184	25	26	25	2	25	0	0	0	0
	15stop	7										
Kenwood EB1	2	8	184	25	26	25	2	25	0	0	0	0
	2light	9										
Helix SB	75	10	58	25	14	25	8	25	0	0	0	0
	76	11	58	25	14	25	8	25	0	0	0	0
	77	12	58	25	14	25	8	25	0	0	0	0
	78	13	58	25	14	25	8	25	0	0	0	0
	79	14	58	25	14	25	8	25	0	0	0	0
	80	15	58	25	14	25	8	25	0	0	0	0
	81	16	58	25	14	25	8	25	0	0	0	0
	82	17	58	25	14	25	8	25	0	0	0	0
	83	18	58	25	14	25	8	25	0	0	0	0
	84	19	58	25	14	25	8	25	0	0	0	0
	85	20	58	25	14	25	8	25	0	0	0	0
	86	21	58	25	14	25	8	25	0	0	0	0
	87	22	58	25	14	25	8	25	0	0	0	0
	88	23	58	25	14	25	8	25	0	0	0	0
	89	24	58	25	14	25	8	25	0	0	0	0
	90	25	58	25	14	25	8	25	0	0	0	0
	91	26	58	25	14	25	8	25	0	0	0	0
	92	27	58	25	14	25	8	25	0	0	0	0
	93	28	58	25	14	25	8	25	0	0	0	0
	93light	29										
Helix NB	55	30	58	25	14	25	8	25	0	0	0	0
	55light	31										
Rte 94 EB3	37	32	0	0	0	0	0	0	0	0	0	0
	43	33	0	0	0	0	0	0	0	0	0	0
	49	34										
Rte 94 EB2	38	35	0	0	0	0	0	0	0	0	0	0
	44	36	0	0	0	0	0	0	0	0	0	0
	50	37										
Rte 94 EB1	39	38	0	0	0	0	0	0	0	0	0	0
	45	39	0	0	0	0	0	0	0	0	0	0
	51	40										
Rte 94 WB1	52	41	0	0	0	0	0	0	0	0	0	0
	46	42	0	0	0	0	0	0	0	0	0	0
	40	43										
Rte 94 WB2	53	44	0	0	0	0	0	0	0	0	0	0
	47	45	0	0	0	0	0	0	0	0	0	0
	41	46										
Rte 94 WB3	54	47	0	0	0	0	0	0	0	0	0	0
	48	48	0	0	0	0	0	0	0	0	0	0
	42	49										
Kenwood WB1-2	point110	50	184	25	26	25	2	25	0	0	0	0
	11	51	184	25	26	25	2	25	0	0	0	0
	7	52	184	25	26	25	2	25	0	0	0	0
	3	53										
Kenwood EB1-2	point111	54	184	25	26	25	2	25	0	0	0	0
	6	55	184	25	26	25	2	25	0	0	0	0
	10	56	184	25	26	25	2	25	0	0	0	0
	14	57	184	35	26	35	2	35	0	0	0	0
	18	58	184	35	26	35	2	35	0	0	0	0
	22	59	184	35	26	35	2	35	0	0	0	0
	26	60	184	35	26	35	2	35	0	0	0	0
	30	61	184	35	26	35	2	35	0	0	0	0
	34	62										

Helix NB-2	point113	63	58	25	14	25	8	25	0	0	0	0
	10	64	58	25	14	25	8	25	0	0	0	0
	11	65	58	25	14	25	8	25	0	0	0	0
	56	66	58	25	14	25	8	25	0	0	0	0
	57	67	58	25	14	25	8	25	0	0	0	0
	58	68	58	25	14	25	8	25	0	0	0	0
	59	69	58	25	14	25	8	25	0	0	0	0
	60	70	58	25	14	25	8	25	0	0	0	0
	61	71	58	25	14	25	8	25	0	0	0	0
	62	72	58	25	14	25	8	25	0	0	0	0
	63	73	58	25	14	25	8	25	0	0	0	0
	64	74	58	25	14	25	8	25	0	0	0	0
	65	75	58	25	14	25	8	25	0	0	0	0
	66	76	58	25	14	25	8	25	0	0	0	0
	67	77	58	25	14	25	8	25	0	0	0	0
	68	78	58	25	14	25	8	25	0	0	0	0
	69	79	58	25	14	25	8	25	0	0	0	0
	70	80	58	25	14	25	8	25	0	0	0	0
	71	81	58	25	14	25	8	25	0	0	0	0
	72	82	58	25	14	25	8	25	0	0	0	0
	73	83	58	25	14	25	8	25	0	0	0	0
	74	84										
Helix SB-2	point114	85	58	25	14	25	8	25	0	0	0	0
	7	86	58	25	14	25	8	25	0	0	0	0
	6	87	58	25	14	25	8	25	0	0	0	0
	94	88										

Building Rows			Points			
Name	Average Height	Building Percentage	No.	Coordinates (ground)		
				x	y	z
	ft	%		ft	ft	ft
Kenwood1	15	20	6	1108.0	555.1	380.0
			7	1291.0	555.1	383.0
			8	1291.0	510.6	383.0
			9	1108.0	510.6	380.0
			10	1108.0	554.5	380.0
Helix2	15	20	11	1227.0	778.8	391.0
			12	1227.0	833.8	391.0
			13	1277.0	833.8	391.0
			14	1277.0	778.8	391.0
			15	1227.1	778.8	391.0
Helix1	15	20	16	1077.1	897.0	396.0
			17	1077.1	1077.0	428.0
			18	1248.1	1077.0	428.0
			19	1248.1	897.0	396.0
			20	1079.4	897.0	396.0
kenwood2	15	20	21	1389.0	660.8	387.0
			22	1389.0	727.8	387.0
			23	2123.9	653.8	387
			24	2121.6	593.7	387
			25	1393.7	663.1	387

Barriers				Points									
Name	Type	If berm		Name	No.	Coordinates			Height at point	Segment			
		top width	run: rise			x	y	z		Segment height pertubation			On Struct?
										Increment	# Up	# Dn	
		ft	ft:ft			ft	ft	ft	ft	ft			
adjacent west	W			point2	1	1021.9	663.8	384	25	0	0	0	
				point3	2	1021.9	748.8	388	25	0	0	0	
				point4	3	1071.9	748.8	388	25	0	0	0	
				point5	4	1071.9	663.8	384	25	0	0	0	
				point6	5	1021.9	663.8	384	25				
adjacent east	W			point6	6	1219	668.8	385	25	0	0	0	
				point7	7	1219	724.5	390	25	0	0	0	
				point8	8	1249.9	724.5	390	25	0	0	0	
				point9	9	1249.9	668.8	385	25	0	0	0	
				point10	10	1219	668.8	385	25				
adjacent north	W			point11	11	1143.3	708	387	15	0	0	0	
				point12	12	1143.3	748	388	15	0	0	0	
				point13	13	1193.7	748	390	15	0	0	0	
				point14	14	1193.7	708	388	15	0	0	0	
				point15	15	1143.4	708	387	15				
fence W	W			point18	18	1214	750.8	390	6	0	0	0	
				point19	19	1214	635	387	6	0	0	0	
				point25	25	1214	634.9	387	3	0	0	0	
				point20	20	1214	627	384	3				
fence E	W			point21	21	1254.9	750.8	390	6	0	0	0	
				point22	22	1254.9	635	387	6	0	0	0	
				point24	24	1254.9	634.9	387	3	0	0	0	
				point23	23	1254.9	627	384	3				

Terrain Lines	Points			
Name	No.	Coordinates (ground)		
		x	y	z
		ft	ft	ft
N/A				

Receivers							Sound Levels		
Name	No.	No. of Dwelling Units	Coordinates (pavement)			Height above ground	Calculated Laeq 1hr		
			x	y	z		With Barrier	Without Barrier	Noise Reduction
			ft	ft	ft	ft	dBA	dBA	dBA
On-site measurement location	1	1	1178.90	649.80	384.00	5.00	-	64	0.0

EILAR ASSOCIATES: Current Traffic Conditions

Prepared by: Dave So

Project Number: A61042N1
Project Name: Kenwood Apartment Project
Run Title: Current Traffic Condition

Client Name: Flash Holdings Inc.
Attention: Antonio Arcangeli

Roadways		Points								
				Coordinates (pavement)			Flow Control			Segm
Name	Width	Name	No.	x	y	z	Control Device	Speed Constraint	Percent Vehicles Affected	Pavement Type
	ft			ft	ft	ft		mph	%	
Kenwood WB1	18	35	1	4025.5	1223.8	413.00				Average
		31	2	3732.0	903.7	410.00				Average
		27	3	3604.1	829.1	410.00				Average
		23	4	3249.7	710.1	410.00				Average
		19	5	2340.7	539.3	392.00				Average
		15	6	2181.2	534.8	388.00				Average
		15stop	7	1365.9	608.4	387.00				
Kenwood EB1	18	2	8	512.2	589.9	376.00				Average
		2light	9	1320.4	590.8	387.00				
Helix SB	12	75	10	569.1	2368.9	407.00				Average
		76	11	725.1	2447.6	410.00				Average
		77	12	853.5	2468.0	410.00				Average
		78	13	1254.5	2412.6	426.00				Average
		79	14	1317.3	2379.1	434.00				Average
		80	15	1350.8	2325.2	441.00				Average
		81	16	1350.8	2243.5	449.00				Average
		82	17	1285.2	2151.7	454.00				Average
		83	18	939.5	1889.4	455.00				Average
		84	19	849.1	1810.6	455.00				Average
		85	20	782.0	1697.0	465.00				Average
		86	21	735.4	1570.1	467.00				Average
		87	22	741.2	1456.5	461.00				Average
		88	23	777.9	1358.3	454.00				Average
		89	24	856.6	1278.1	446.00				Average
		90	25	989.3	1212.5	446.00				Average
		91	26	1257.7	1152.8	437.00				Average
		92	27	1300.0	1094.5	424.00				Average
		93	28	1321.9	951.6	400.00				Average
		93light	29	1334.0	623.8	387.00				
Helix NB	12	55	30	1369.9	-32.2	377.00				Average
		55light	31	1352.0	575.4	387.00				
Rte 94 EB2	12	38	35	518.0	2674.9	412.00				Average
		44	36	1986.1	2308.5	496.00				Average
		50	37	3988.7	1342.7	413.00				
Rte 94 EB1	12	39	38	523.8	2692.2	412				Average
		45	39	1991.9	2325.9	495				Average
		51	40	3994.4	1360.1	413				
Rte 94 WB1	12	52	41	4025.9	1421.5	416				Average
		46	42	1909.1	2419.6	484				Average
		40	43	542	2762.2	413				
Rte 94 WB2	12	53	44	4033.5	1439	416				Average
		47	45	1916.8	2437.2	483				Average
		41	46	549.7	2779.8	413				
Kenwood WB1-2	18	point110	50	1365.9	608.4	387	Stop	0	100	Average
		11	51	1350.9	608.4	387				Average
		7	52	1334.9	608.8	387				Average
		3	53	513.3	607.9	376				
Kenwood EB1-2	18	point111	54	1320.4	590.8	387	Stop	0	100	Average
		6	55	1335.4	590.8	387				Average
		10	56	1351.4	590.4	387				Average
		14	57	2183.1	516.8	388				Average
		18	58	2346.6	520.8	392				Average
		22	59	3258.2	691	411				Average

		26	60	3615.2	814.5	411				Average
		30	61	3746.8	893	411				Average
		34	62	4046	1215.9	413				
Helix NB-2	12	point113	63	1352	575.4	387	Stop	0	100	Average
		10	64	1351.4	590.4	387				Average
		11	65	1350.9	608.4	387				Average
		56	66	1337.9	953.1	400				Average
		57	67	1319.2	1099.3	424				Average
		58	68	1270	1171.6	437				Average
		59	69	990.6	1232.4	446				Average
		60	70	867.5	1296	446				Average
		61	71	795.1	1369.8	454				Average
		62	72	760.6	1462.4	461				Average
		63	73	753.4	1569.5	467				Average
		64	74	798.2	1691	465				Average
		65	75	866.3	1801	455				Average
		66	76	953.1	1876.2	455				Average
		67	77	1300.6	2139.6	454				Average
		68	78	1373	2239.4	449				Average
		69	79	1368.6	2329.1	441				Average
		70	80	1329.5	2394.2	434				Average
		71	81	1261.5	2431.8	426				Average
		72	82	850.4	2488.2	410				Average
		73	83	721.5	2468	410				Average
		74	84	562.3	2388.4	407				
Helix SB-2	12	point114	85	1334	623.8	387	Stop	0	100	Average
		7	86	1334.9	608.8	387				Average
		6	87	1335.4	590.8	387				Average
		94	88	1353.9	-32.2	377				

Roadways	Points											
Name	Name	No.	Segment									
			Autos		Mtrucks		Htrucks		Buses		Motorcycles	
			Volume	Speed	Volume	Speed	Volume	Speed	Volume	Speed	Volume	Speed
			veh/hr	mph								
Kenwood WB1	35	1	213	35	16	35	2	35	0	0	0	0
	31	2	213	35	16	35	2	35	0	0	0	0
	27	3	213	35	16	35	2	35	0	0	0	0
	23	4	213	35	16	35	2	35	0	0	0	0
	19	5	213	35	16	35	2	35	0	0	0	0
	15	6	213	35	16	35	2	35	0	0	0	0
	15stop	7										
Kenwood EB1	2	8	213	35	16	35	2	35	0	0	0	0
	2light	9										
Helix SB	75	10	106	25	8	25	2	25	0	0	0	0
	76	11	106	25	8	25	2	25	0	0	0	0
	77	12	106	25	8	25	2	25	0	0	0	0
	78	13	106	25	8	25	2	25	0	0	0	0
	79	14	106	25	8	25	2	25	0	0	0	0
	80	15	106	25	8	25	2	25	0	0	0	0
	81	16	106	25	8	25	2	25	0	0	0	0
	82	17	106	25	8	25	2	25	0	0	0	0
	83	18	106	25	8	25	2	25	0	0	0	0
	84	19	106	25	8	25	2	25	0	0	0	0
	85	20	106	25	8	25	2	25	0	0	0	0
	86	21	106	25	8	25	2	25	0	0	0	0
	87	22	106	25	8	25	2	25	0	0	0	0
	88	23	106	25	8	25	2	25	0	0	0	0
	89	24	106	25	8	25	2	25	0	0	0	0
	90	25	106	25	8	25	2	25	0	0	0	0
	91	26	106	25	8	25	2	25	0	0	0	0
	92	27	106	25	8	25	2	25	0	0	0	0
	93	28	106	25	8	25	2	25	0	0	0	0
	93light	29										
Helix NB	55	30	106	25	8	25	2	25	0	0	0	0
	55light	31										
Rte 94 EB2	38	35	1135	65	33	65	26	65	0	0	0	0
	44	36	1135	65	33	65	26	65	0	0	0	0
	50	37										
Rte 94 EB1	39	38	1135	65	33	65	26	65	0	0	0	0
	45	39	1135	65	33	65	26	65	0	0	0	0
	51	40										
Rte 94 WB1	52	41	1174	65	35	65	27	65	0	0	0	0
	46	42	1174	65	35	65	27	65	0	0	0	0
	40	43										
Rte 94 WB2	53	44	1174	65	35	65	27	65	0	0	0	0
	47	45	1174	65	35	65	27	65	0	0	0	0
	41	46										
Kenwood WB1-2	point110	50	213	35	16	35	2	35	0	0	0	0
	11	51	213	35	16	35	2	35	0	0	0	0
	7	52	213	35	16	35	2	35	0	0	0	0
	3	53										
Kenwood EB1-2	point111	54	213	35	16	35	2	35	0	0	0	0
	6	55	213	35	16	35	2	35	0	0	0	0
	10	56	213	35	16	35	2	35	0	0	0	0
	14	57	213	35	16	35	2	35	0	0	0	0
	18	58	213	35	16	35	2	35	0	0	0	0
	22	59	213	35	16	35	2	35	0	0	0	0
	26	60	213	35	16	35	2	35	0	0	0	0
	30	61	213	35	16	35	2	35	0	0	0	0
	34	62										
Helix NB-2	point113	63	106	25	8	25	2	25	0	0	0	0
	10	64	106	25	8	25	2	25	0	0	0	0
	11	65	106	25	8	25	2	25	0	0	0	0
	56	66	106	25	8	25	2	25	0	0	0	0
	57	67	106	25	8	25	2	25	0	0	0	0
	58	68	106	25	8	25	2	25	0	0	0	0
	59	69	106	25	8	25	2	25	0	0	0	0
	60	70	106	25	8	25	2	25	0	0	0	0
	61	71	106	25	8	25	2	25	0	0	0	0
	62	72	106	25	8	25	2	25	0	0	0	0
	63	73	106	25	8	25	2	25	0	0	0	0
	64	74	106	25	8	25	2	25	0	0	0	0
	65	75	106	25	8	25	2	25	0	0	0	0
	66	76	106	25	8	25	2	25	0	0	0	0
	67	77	106	25	8	25	2	25	0	0	0	0
	68	78	106	25	8	25	2	25	0	0	0	0
	69	79	106	25	8	25	2	25	0	0	0	0
	70	80	106	25	8	25	2	25	0	0	0	0
	71	81	106	25	8	25	2	25	0	0	0	0
	72	82	106	25	8	25	2	25	0	0	0	0
	73	83	106	25	8	25	2	25	0	0	0	0
	74	84										
Helix SB-2	point114	85	106	25	8	25	2	25	0	0	0	0
	7	86	106	25	8	25	2	25	0	0	0	0
	6	87	106	25	8	25	2	25	0	0	0	0
	94	88										

Building Rows			Points			
Name	Average Height	Building Percentage	No.	Coordinates (ground)		
				x	y	z
	ft	%		ft	ft	ft
Kenwood1	15	20	6	1108.0	555.1	380.0
			7	1291.0	555.1	383.0
			8	1291.0	510.6	383.0
			9	1108.0	510.6	380.0
			10	1108.0	554.5	380.0
Helix2	15	20	11	1227.0	778.8	391.0
			12	1227.0	833.8	391.0
			13	1277.0	833.8	391.0
			14	1277.0	778.8	391.0
			15	1227.1	778.8	391.0
Helix1	15	20	16	1077.1	897.0	396.0
			17	1077.1	1077.0	428.0
			18	1248.1	1077.0	428.0
			19	1248.1	897.0	396.0
			20	1079.4	897.0	396.0
kenwood2	15	20	21	1389.0	660.8	387.0
			22	1389.0	727.8	387.0
			23	2123.9	653.8	387
			24	2121.6	593.7	387
			25	1393.7	663.1	387

Barriers				Points									
Name	Type	If berm		Name	No.	Coordinates			Height at point	Seg			
		top width	run: rise			x	y	z		Segment height pertubation			
										Incre-ment	# Up	# Dn	
		ft	ft:ft			ft	ft	ft	ft	ft			
adjacent west	W			point2	1	1021.9	663.8	384	25	0	0	0	
				point3	2	1021.9	748.8	388	25	0	0	0	
				point4	3	1071.9	748.8	388	25	0	0	0	
				point5	4	1071.9	663.8	384	25	0	0	0	
				point6	5	1021.9	663.8	384	25				
adjacent east	W			point6	6	1219	668.8	385	25	0	0	0	
				point7	7	1219	724.5	390	25	0	0	0	
				point8	8	1249.9	724.5	390	25	0	0	0	
				point9	9	1249.9	668.8	385	25	0	0	0	
				point10	10	1219	668.8	385	25				
fence E	W			point21	21	1254.9	750.8	390	6	0	0	0	
				point22	22	1254.9	635	387	6	0	0	0	
				point24	24	1254.9	634.9	387	3	0	0	0	
				point23	23	1254.9	627	384	3				
Barrier13	W			point18	52	1214	750.8	390	6	0	0	0	
				point19	53	1214	635	387	6	0	0	0	
				point25	54	1214	634.9	387	3	0	0	0	
				point20	55	1214	627	384	3				
existing house to north	W			point58	58	1120	832	392	15	0	0	0	
				point59	59	1120	852	394	15	0	0	0	
				point60	60	1180	852	394	15	0	0	0	
				point61	62	1180	832	392	15	0	0	0	
				point61	61	1120.1	832	392	15				

Terrain Lines	Points			
Name	No.	Coordinates (ground)		
		x	y	z
		ft	ft	ft
N/A				

Receivers							Sound Levels		
			Coordinates (pavement)				Calculated Laeq 1hr		
Name	No.	No. of Dwelling Units	x	y	z	Height above ground	With Barrier	Without Barrier	Noise Reduction
			ft	ft	ft	ft	dBA	dBA	dBA
measurement position	14	1	1178.9	649.8	385.0	5.0	-	64.0	-
1	17	1	1121.5	651.1	385.3	5.0	-	64.2	-
2	18	1	1136.5	651.1	385.3	5.0	-	64.2	-
3	19	1	1151.5	651.1	385.3	5.0	-	64.2	-
4	20	1	1166.5	651.1	385.3	5.0	-	64.1	-
5	21	1	1181.5	651.1	385.3	5.0	-	63.8	-
6	22	1	1196.5	651.1	385.3	5.0	-	63.3	-
7	23	1	1106.5	651.1	385.3	5.0	-	64.2	-
8	24	1	1121.5	666.1	385.6	5.0	-	62.6	-
9	25	1	1136.5	666.1	385.6	5.0	-	62.5	-
10	26	1	1151.5	666.1	385.6	5.0	-	62.4	-
11	27	1	1166.5	666.1	385.6	5.0	-	62.2	-
12	28	1	1181.5	666.1	385.6	5.0	-	61.9	-
13	29	1	1196.5	666.1	385.6	5.0	-	61.4	-
14	30	1	1106.5	666.1	385.6	5.0	-	62.7	-
15	31	1	1121.5	681.1	386.0	5.0	-	60.9	-
16	32	1	1136.5	681.1	386.0	5.0	-	61.0	-
17	33	1	1151.5	681.1	386.0	5.0	-	60.9	-
18	34	1	1166.5	681.1	386.0	5.0	-	60.7	-
19	35	1	1181.5	681.1	386.0	5.0	-	60.3	-
20	36	1	1196.5	681.1	386.0	5.0	-	59.7	-
21	37	1	1106.5	681.1	386.0	5.0	-	60.8	-
22	38	1	1121.5	696.1	386.3	5.0	-	58.9	-
23	39	1	1136.5	696.1	386.3	5.0	-	59.0	-
24	40	1	1151.5	696.1	386.3	5.0	-	58.9	-
25	41	1	1166.5	696.1	386.3	5.0	-	58.6	-
26	42	1	1181.5	696.1	386.3	5.0	-	58.1	-
27	43	1	1196.5	696.1	386.3	5.0	-	57.5	-
28	44	1	1106.5	696.1	386.3	5.0	-	58.7	-
29	45	1	1121.5	711.1	386.6	5.0	-	57.1	-
30	46	1	1136.5	711.1	386.6	5.0	-	57.2	-
31	48	1	1151.5	711.1	386.6	5.0	-	57.1	-
32	49	1	1166.5	711.1	386.6	5.0	-	56.8	-
33	50	1	1181.5	711.1	386.6	5.0	-	56.4	-
34	51	1	1196.5	711.1	386.6	5.0	-	55.8	-
35	52	1	1106.5	711.1	386.6	5.0	-	56.9	-
36	53	1	1121.5	726.1	387.0	5.0	-	55.6	-
37	54	1	1136.5	726.1	387.0	5.0	-	55.7	-
38	55	1	1151.5	726.1	387.0	5.0	-	55.6	-
39	56	1	1166.5	726.1	387.0	5.0	-	55.4	-
40	57	1	1181.5	726.1	387.0	5.0	-	55.1	-
41	58	1	1196.5	726.1	387.0	5.0	-	54.5	-
42	59	1	1106.5	726.1	387.0	5.0	-	55.4	-
43	60	1	1121.5	741.1	387.3	5.0	-	54.4	-
44	61	1	1136.5	741.1	387.3	5.0	-	54.5	-
45	62	1	1151.5	741.1	387.3	5.0	-	54.6	-
46	63	1	1166.5	741.1	387.3	5.0	-	54.4	-
47	64	1	1181.5	741.1	387.3	5.0	-	54.3	-
48	65	1	1196.5	741.1	387.3	5.0	-	53.8	-
49	66	1	1106.5	741.1	387.3	5.0	-	54.2	-
50	67	1	1121.5	756.1	387.6	5.0	-	53.3	-
51	68	1	1136.5	756.1	387.6	5.0	-	53.6	-
52	69	1	1151.5	756.1	387.6	5.0	-	53.7	-
53	70	1	1166.5	756.1	387.6	5.0	-	53.7	-
54	71	1	1181.5	756.1	387.6	5.0	-	53.8	-
55	72	1	1196.5	756.1	387.6	5.0	-	53.9	-
56	73	1	1106.5	756.1	387.6	5.0	-	53.0	-
57	74	1	1121.5	771.1	388.0	5.0	-	52.5	-
58	75	1	1136.5	771.1	388.0	5.0	-	52.8	-
59	76	1	1151.5	771.1	388.0	5.0	-	53.1	-

60	77	1	1166.5	771.1	388.0	5.0	-	53.3	-
61	78	1	1181.5	771.1	388.0	5.0	-	53.5	-
62	79	1	1196.5	771.1	388.0	5.0	-	54.0	-
63	80	1	1106.5	771.1	388.0	5.0	-	52.2	-
64	81	1	1121.5	786.1	388.3	5.0	-	52.0	-
65	82	1	1136.5	786.1	388.3	5.0	-	52.4	-
66	83	1	1151.5	786.1	388.3	5.0	-	52.8	-
67	84	1	1166.5	786.1	388.3	5.0	-	53.1	-
68	85	1	1181.5	786.1	388.3	5.0	-	53.4	-
69	86	1	1196.5	786.1	388.3	5.0	-	54.0	-
70	87	1	1106.5	786.1	388.3	5.0	-	51.7	-
71	88	1	1121.5	801.1	388.6	5.0	-	51.5	-
72	89	1	1136.5	801.1	388.6	5.0	-	51.9	-
73	90	1	1151.5	801.1	388.6	5.0	-	52.5	-
74	91	1	1166.5	801.1	388.6	5.0	-	52.9	-
75	92	1	1181.5	801.1	388.6	5.0	-	53.4	-
76	93	1	1196.5	801.1	388.6	5.0	-	53.9	-
77	94	1	1106.5	801.1	388.6	5.0	-	51.3	-

EILAR ASSOCIATES: Future Traffic Conditions

Prepared by: Dave So

Project Number: A61042N1
Project Name: Kenwood Apartment Project
Run Title: Future Traffic Condition

Client Name: Flash Holdings Inc.
Attention: Antonio Arcangeli

Roadways		Points										
				Coordinates (pavement)			Flow Control			Segment		
Name	Width	Name	No.	x	y	z	Control Device	Speed Constraint	Percent Vehicles Affected	Pavement Type	On Struct?	
	ft			ft	ft	ft		mph	%			
Kenwood WB1	18	35	1	4025.5	1223.8	413.00				Average		
		31	2	3732.0	903.7	410.00				Average		
		27	3	3604.1	829.1	410.00				Average		
		23	4	3249.7	710.1	410.00				Average		
		19	5	2340.7	539.3	392.00				Average		
		15	6	2181.2	534.8	388.00				Average		
		15stop	7	1365.9	608.4	387.00						
Kenwood EB1	18	2	8	512.2	589.9	376.00				Average		
		2light	9	1320.4	590.8	387.00						
Helix SB	12	75	10	569.1	2368.9	407.00				Average		
		76	11	725.1	2447.6	410.00				Average		
		77	12	853.5	2468.0	410.00				Average		
		78	13	1254.5	2412.6	426.00				Average		
		79	14	1317.3	2379.1	434.00				Average		
		80	15	1350.8	2325.2	441.00				Average		
		81	16	1350.8	2243.5	449.00				Average		
		82	17	1285.2	2151.7	454.00				Average		
		83	18	939.5	1889.4	455.00				Average		
		84	19	849.1	1810.6	455.00				Average		
		85	20	782.0	1697.0	465.00				Average		
		86	21	735.4	1570.1	467.00				Average		
		87	22	741.2	1456.5	461.00				Average		
		88	23	777.9	1358.3	454.00				Average		
		89	24	856.6	1278.1	446.00				Average		
		90	25	989.3	1212.5	446.00				Average		
		91	26	1257.7	1152.8	437.00				Average		
		92	27	1300.0	1094.5	424.00				Average		
		93	28	1321.9	951.6	400.00				Average		
		93light	29	1334.0	623.8	387.00						
Helix NB	12	55	30	1369.9	-32.2	377.00				Average		
		55light	31	1352.0	575.4	387.00						
Rte 94 EB2	12	38	35	518.0	2674.9	412.00				Average		
		44	36	1986.1	2308.5	496.00				Average		
		50	37	3988.7	1342.7	413.00						
Rte 94 EB1	12	39	38	523.8	2692.2	412				Average		
		45	39	1991.9	2325.9	495				Average		
		51	40	3994.4	1360.1	413						
Rte 94 WB1	12	52	41	4025.9	1421.5	416				Average		
		46	42	1909.1	2419.6	484				Average		
		40	43	542	2762.2	413						
Rte 94 WB2	12	53	44	4033.5	1439	416				Average		
		47	45	1916.8	2437.2	483				Average		
		41	46	549.7	2779.8	413						
Kenwood WB1-2	18	point110	50	1365.9	608.4	387	Stop	0	100	Average		
		11	51	1350.9	608.4	387				Average		
		7	52	1334.9	608.8	387				Average		
		3	53	513.3	607.9	376						
Kenwood EB1-2	18	point111	54	1320.4	590.8	387	Stop	0	100	Average		
		6	55	1335.4	590.8	387				Average		
		10	56	1351.4	590.4	387				Average		
		14	57	2183.1	516.8	388				Average		
		18	58	2346.6	520.8	392				Average		
		22	59	3258.2	691	411				Average		
		26	60	3615.2	814.5	411				Average		
		30	61	3746.8	893	411				Average		
		34	62	4046	1215.9	413						
Helix NB-2	12	point113	63	1352	575.4	387	Stop	0	100	Average		

		10	64	1351.4	590.4	387				Average	
		11	65	1350.9	608.4	387				Average	
		56	66	1337.9	953.1	400				Average	
		57	67	1319.2	1099.3	424				Average	
		58	68	1270	1171.6	437				Average	
		59	69	990.6	1232.4	446				Average	
		60	70	867.5	1296	446				Average	
		61	71	795.1	1369.8	454				Average	
		62	72	760.6	1462.4	461				Average	
		63	73	753.4	1569.5	467				Average	
		64	74	798.2	1691	465				Average	
		65	75	866.3	1801	455				Average	
		66	76	953.1	1876.2	455				Average	
		67	77	1300.6	2139.6	454				Average	
		68	78	1373	2239.4	449				Average	
		69	79	1368.6	2329.1	441				Average	
		70	80	1329.5	2394.2	434				Average	
		71	81	1261.5	2431.8	426				Average	
		72	82	850.4	2488.2	410				Average	
		73	83	721.5	2468	410				Average	
		74	84	562.3	2388.4	407					
Helix SB-2	12	point114	85	1334	623.8	387	Stop	0	100	Average	
		7	86	1334.9	608.8	387				Average	
		6	87	1335.4	590.8	387				Average	
		94	88	1353.9	-32.2	377					
Rte 94 WB3	12	54	89	4038.2	1458.4	416				Average	
		48	90	1921.4	2456.5	482				Average	
		42	91	554.3	2799.1	413					
Rte 94 EB3	12	37	92	513.5	2658	411				Average	
		43	93	1981.7	2291.6	497				Average	
		49	94	3984.2	1325.8	413					

Roadways	Points											
			Segment									
Name	Name	No.	Autos		Mtrucks		Htrucks		Buses		Motorcycles	
			Volume	Speed	Volume	Speed	Volume	Speed	Volume	Speed	Volume	Speed
			veh/hr	mph								
Kenwood WB1	35	1	213	40	16	40	2	40	0	0	0	0
	31	2	213	40	16	40	2	40	0	0	0	0
	27	3	213	40	16	40	2	40	0	0	0	0
	23	4	213	40	16	40	2	40	0	0	0	0
	19	5	213	40	16	40	2	40	0	0	0	0
	15	6	213	40	16	40	2	40	0	0	0	0
	15stop	7										
Kenwood EB1	2	8	213	40	16	40	2	40	0	0	0	0
	2light	9										
Helix SB	75	10	106	25	8	25	2	25	0	0	0	0
	76	11	106	25	8	25	2	25	0	0	0	0
	77	12	106	25	8	25	2	25	0	0	0	0
	78	13	106	25	8	25	2	25	0	0	0	0
	79	14	106	25	8	25	2	25	0	0	0	0
	80	15	106	25	8	25	2	25	0	0	0	0
	81	16	106	25	8	25	2	25	0	0	0	0
	82	17	106	25	8	25	2	25	0	0	0	0
	83	18	106	25	8	25	2	25	0	0	0	0
	84	19	106	25	8	25	2	25	0	0	0	0
	85	20	106	25	8	25	2	25	0	0	0	0
	86	21	106	25	8	25	2	25	0	0	0	0
	87	22	106	25	8	25	2	25	0	0	0	0
	88	23	106	25	8	25	2	25	0	0	0	0
	89	24	106	25	8	25	2	25	0	0	0	0
	90	25	106	25	8	25	2	25	0	0	0	0
	91	26	106	25	8	25	2	25	0	0	0	0
	92	27	106	25	8	25	2	25	0	0	0	0
	93	28	106	25	8	25	2	25	0	0	0	0
	93light	29										
Helix NB	55	30	106	25	8	25	2	25	0	0	0	0
	55light	31										
Rte 94 EB2	38	35	1194	65	35	65	28	65	0	0	0	0
	44	36	1194	65	35	65	28	65	0	0	0	0
	50	37										
Rte 94 EB1	39	38	1194	65	35	65	28	65	0	0	0	0
	45	39	1194	65	35	65	28	65	0	0	0	0
	51	40										
Rte 94 WB1	52	41	1249	65	37	65	29	65	0	0	0	0
	46	42	1249	65	37	65	29	65	0	0	0	0
	40	43										
Rte 94 WB2	53	44	1249	65	37	65	29	65	0	0	0	0
	47	45	1249	65	37	65	29	65	0	0	0	0
	41	46										
Kenwood WB1-2	point110	50	213	40	16	40	2	40	0	0	0	0
	11	51	213	40	16	40	2	40	0	0	0	0
	7	52	213	40	16	40	2	40	0	0	0	0
	3	53										
Kenwood EB1-2	point111	54	213	40	16	40	2	40	0	0	0	0
	6	55	213	40	16	40	2	40	0	0	0	0
	10	56	213	40	16	40	2	40	0	0	0	0
	14	57	213	40	16	40	2	40	0	0	0	0
	18	58	213	40	16	40	2	40	0	0	0	0
	22	59	213	40	16	40	2	40	0	0	0	0
	26	60	213	40	16	40	2	40	0	0	0	0
	30	61	213	40	16	40	2	40	0	0	0	0
	34	62										
Helix NB-2	point113	63	106	25	8	25	2	25	0	0	0	0
	10	64	106	25	8	25	2	25	0	0	0	0
	11	65	106	25	8	25	2	25	0	0	0	0
	56	66	106	25	8	25	2	25	0	0	0	0
	57	67	106	25	8	25	2	25	0	0	0	0
	58	68	106	25	8	25	2	25	0	0	0	0
	59	69	106	25	8	25	2	25	0	0	0	0
	60	70	106	25	8	25	2	25	0	0	0	0
	61	71	106	25	8	25	2	25	0	0	0	0
	62	72	106	25	8	25	2	25	0	0	0	0
	63	73	106	25	8	25	2	25	0	0	0	0
	64	74	106	25	8	25	2	25	0	0	0	0
	65	75	106	25	8	25	2	25	0	0	0	0
	66	76	106	25	8	25	2	25	0	0	0	0
	67	77	106	25	8	25	2	25	0	0	0	0
	68	78	106	25	8	25	2	25	0	0	0	0
	69	79	106	25	8	25	2	25	0	0	0	0
	70	80	106	25	8	25	2	25	0	0	0	0
	71	81	106	25	8	25	2	25	0	0	0	0
	72	82	106	25	8	25	2	25	0	0	0	0
	73	83	106	25	8	25	2	25	0	0	0	0
	74	84										
Helix SB-2	point114	85	106	25	8	25	2	25	0	0	0	0
	7	86	106	25	8	25	2	25	0	0	0	0
	6	87	106	25	8	25	2	25	0	0	0	0
	94	88										
Rte 94 WB3	54	89	1249	65	37	65	29	65	0	0	0	0
	48	90	1249	65	37	65	29	65	0	0	0	0
	42	91										
Rte 94 EB3	37	92	1194	65	35	65	28	65	0	0	0	0
	43	93	1194	65	35	65	28	65	0	0	0	0
	49	94										

Building Rows			Points			
Name	Average Height	Building Percentage	No.	Coordinates (ground)		
				x	y	z
	ft	%		ft	ft	ft
Kenwood1	15	20	6	1108.0	555.1	380.0
			7	1291.0	555.1	383.0
			8	1291.0	510.6	383.0
			9	1108.0	510.6	380.0
			10	1108.0	554.5	380.0
Helix2	15	20	11	1227.0	778.8	391.0
			12	1227.0	833.8	391.0
			13	1277.0	833.8	391.0
			14	1277.0	778.8	391.0
			15	1227.1	778.8	391.0
Helix1	15	20	16	1077.1	897.0	396.0
			17	1077.1	1077.0	428.0
			18	1248.1	1077.0	428.0
			19	1248.1	897.0	396.0
			20	1079.4	897.0	396.0
kenwood2	15	20	21	1389.0	660.8	387.0
			22	1389.0	727.8	387.0
			23	2123.9	653.8	387
			24	2121.6	593.7	387
			25	1393.7	663.1	387

Barriers				Points									
Name	Type	If berm		Name	No.	Coordinates			Height at point	Segment			On Struct?
		top width	run: rise			x	y	z		Segment height pertubation			
										Increment	# Up	# Dn	
		ft	ft:ft			ft	ft	ft	ft	ft			
adjacent west	W			point2	1	1021.9	663.8	384	25	0	0	0	
				point3	2	1021.9	748.8	388	25	0	0	0	
				point4	3	1071.9	748.8	388	25	0	0	0	
				point5	4	1071.9	663.8	384	25	0	0	0	
				point6	5	1021.9	663.8	384	25				
adjacent east	W			point6	6	1219	668.8	385	25	0	0	0	
				point7	7	1219	724.5	390	25	0	0	0	
				point8	8	1249.9	724.5	390	25	0	0	0	
				point9	9	1249.9	668.8	385	25	0	0	0	
				point10	10	1219	668.8	385	25				
fence E	W			point21	21	1254.9	750.8	390	6	0	0	0	
				point22	22	1254.9	635	387	6	0	0	0	
				point24	24	1254.9	634.9	387	3	0	0	0	
				point23	23	1254.9	627	384	3				
Barrier13	W			point18	52	1214	750.8	390	6	0	0	0	
				point19	53	1214	635	387	6	0	0	0	
				point25	54	1214	634.9	387	3	0	0	0	
				point20	55	1214	627	384	3				
existing house to north	W			point58	58	1120	832	392	15	0	0	0	
				point59	59	1120	852	394	15	0	0	0	
				point60	60	1180	852	394	15	0	0	0	
				point61	62	1180	832	392	15	0	0	0	
				point61	61	1120.1	832	392	15				

Terrain Lines	Points			
Name	No.	Coordinates (ground)		
		x	y	z
		ft	ft	ft
N/A				

Receivers							Sound Levels		
			Coordinates (pavement)				Calculated Laeq 1hr		
Name	No.	No. of Dwelling Units	x	y	z	Height above ground	With Barrier	Without Barrier	Noise Reduction
			ft	ft	ft	ft	dBA	dBA	dBA
measurement position	14	1	1178.9	649.8	385.0	5.0	-	64.4	-
1	17	1	1121.5	651.1	385.3	5.0	-	64.6	-
2	18	1	1136.5	651.1	385.3	5.0	-	64.6	-
3	19	1	1151.5	651.1	385.3	5.0	-	64.6	-
4	20	1	1166.5	651.1	385.3	5.0	-	64.5	-
5	21	1	1181.5	651.1	385.3	5.0	-	64.2	-
6	22	1	1196.5	651.1	385.3	5.0	-	63.7	-
7	23	1	1106.5	651.1	385.3	5.0	-	64.6	-
8	24	1	1121.5	666.1	385.6	5.0	-	63.1	-
9	25	1	1136.5	666.1	385.6	5.0	-	63.0	-
10	26	1	1151.5	666.1	385.6	5.0	-	62.8	-
11	27	1	1166.5	666.1	385.6	5.0	-	62.7	-
12	28	1	1181.5	666.1	385.6	5.0	-	62.3	-
13	29	1	1196.5	666.1	385.6	5.0	-	61.8	-
14	30	1	1106.5	666.1	385.6	5.0	-	63.1	-
15	31	1	1121.5	681.1	386.0	5.0	-	61.3	-
16	32	1	1136.5	681.1	386.0	5.0	-	61.3	-
17	33	1	1151.5	681.1	386.0	5.0	-	61.2	-
18	34	1	1166.5	681.1	386.0	5.0	-	61.0	-
19	35	1	1181.5	681.1	386.0	5.0	-	60.7	-
20	36	1	1196.5	681.1	386.0	5.0	-	60.1	-
21	37	1	1106.5	681.1	386.0	5.0	-	61.2	-
22	38	1	1121.5	696.1	386.3	5.0	-	59.3	-
23	39	1	1136.5	696.1	386.3	5.0	-	59.4	-
24	40	1	1151.5	696.1	386.3	5.0	-	59.3	-
25	41	1	1166.5	696.1	386.3	5.0	-	59.0	-
26	42	1	1181.5	696.1	386.3	5.0	-	58.5	-
27	43	1	1196.5	696.1	386.3	5.0	-	57.9	-
28	44	1	1106.5	696.1	386.3	5.0	-	59.0	-
29	45	1	1121.5	711.1	386.6	5.0	-	57.5	-
30	46	1	1136.5	711.1	386.6	5.0	-	57.6	-
31	48	1	1151.5	711.1	386.6	5.0	-	57.5	-
32	49	1	1166.5	711.1	386.6	5.0	-	57.2	-
33	50	1	1181.5	711.1	386.6	5.0	-	56.9	-
34	51	1	1196.5	711.1	386.6	5.0	-	56.3	-
35	52	1	1106.5	711.1	386.6	5.0	-	57.3	-
36	53	1	1121.5	726.1	387.0	5.0	-	56.0	-
37	54	1	1136.5	726.1	387.0	5.0	-	56.1	-
38	55	1	1151.5	726.1	387.0	5.0	-	56.0	-
39	56	1	1166.5	726.1	387.0	5.0	-	55.8	-
40	57	1	1181.5	726.1	387.0	5.0	-	55.6	-
41	58	1	1196.5	726.1	387.0	5.0	-	55.0	-
42	59	1	1106.5	726.1	387.0	5.0	-	55.8	-
43	60	1	1121.5	741.1	387.3	5.0	-	54.7	-
44	61	1	1136.5	741.1	387.3	5.0	-	54.9	-
45	62	1	1151.5	741.1	387.3	5.0	-	55.0	-
46	63	1	1166.5	741.1	387.3	5.0	-	54.8	-
47	64	1	1181.5	741.1	387.3	5.0	-	54.7	-
48	65	1	1196.5	741.1	387.3	5.0	-	54.2	-
49	66	1	1106.5	741.1	387.3	5.0	-	54.6	-
50	67	1	1121.5	756.1	387.6	5.0	-	53.7	-
51	68	1	1136.5	756.1	387.6	5.0	-	53.9	-
52	69	1	1151.5	756.1	387.6	5.0	-	54.1	-
53	70	1	1166.5	756.1	387.6	5.0	-	54.2	-
54	71	1	1181.5	756.1	387.6	5.0	-	54.1	-
55	72	1	1196.5	756.1	387.6	5.0	-	54.3	-
56	73	1	1106.5	756.1	387.6	5.0	-	53.4	-
57	74	1	1121.5	771.1	388.0	5.0	-	52.9	-
58	75	1	1136.5	771.1	388.0	5.0	-	53.2	-
59	76	1	1151.5	771.1	388.0	5.0	-	53.5	-
60	77	1	1166.5	771.1	388.0	5.0	-	53.7	-
61	78	1	1181.5	771.1	388.0	5.0	-	53.9	-
62	79	1	1196.5	771.1	388.0	5.0	-	54.2	-
63	80	1	1106.5	771.1	388.0	5.0	-	52.6	-
64	81	1	1121.5	786.1	388.3	5.0	-	52.4	-
65	82	1	1136.5	786.1	388.3	5.0	-	52.8	-
66	83	1	1151.5	786.1	388.3	5.0	-	53.2	-
67	84	1	1166.5	786.1	388.3	5.0	-	53.4	-
68	85	1	1181.5	786.1	388.3	5.0	-	53.8	-
69	86	1	1196.5	786.1	388.3	5.0	-	54.2	-
70	87	1	1106.5	786.1	388.3	5.0	-	52.1	-
71	88	1	1121.5	801.1	388.6	5.0	-	51.9	-
72	89	1	1136.5	801.1	388.6	5.0	-	52.3	-
73	90	1	1151.5	801.1	388.6	5.0	-	52.8	-
74	91	1	1166.5	801.1	388.6	5.0	-	53.3	-
75	92	1	1181.5	801.1	388.6	5.0	-	53.7	-
76	93	1	1196.5	801.1	388.6	5.0	-	54.1	-
77	94	1	1106.5	801.1	388.6	5.0	-	51.6	

EILAR ASSOCIATES: Noise Impact on Building Facades

Prepared by: Dave So

Project Number: A61042N1
Project Name: Kenwood Apartment Project
Run Title: Vehicular Noise Impact on Building Facades

Client Name: Flash Holdings Inc.
Attention: Antonio Arcangeli

Roadways		Points								
				Coordinates (pavement)			Flow Control			Segm
Name	Width	Name	No.	x	y	z	Control Device	Speed Constraint	Percent Vehicles Affected	Pavement Type
	ft			ft	ft	ft		mph	%	
Kenwood WB1	18	35	1	4025.5	1223.8	413.00				Average
		31	2	3732.0	903.7	410.00				Average
		27	3	3604.1	829.1	410.00				Average
		23	4	3249.7	710.1	410.00				Average
		19	5	2340.7	539.3	392.00				Average
		15	6	2181.2	534.8	388.00				Average
		15stop	7	1365.9	608.4	387.00				
Kenwood EB1	18	2	8	512.2	589.9	376.00				Average
		2light	9	1320.4	590.8	387.00				
Helix SB	12	75	10	569.1	2368.9	407.00				Average
		76	11	725.1	2447.6	410.00				Average
		77	12	853.5	2468.0	410.00				Average
		78	13	1254.5	2412.6	426.00				Average
		79	14	1317.3	2379.1	434.00				Average
		80	15	1350.8	2325.2	441.00				Average
		81	16	1350.8	2243.5	449.00				Average
		82	17	1285.2	2151.7	454.00				Average
		83	18	939.5	1889.4	455.00				Average
		84	19	849.1	1810.6	455.00				Average
		85	20	782.0	1697.0	465.00				Average
		86	21	735.4	1570.1	467.00				Average
		87	22	741.2	1456.5	461.00				Average
		88	23	777.9	1358.3	454.00				Average
		89	24	856.6	1278.1	446.00				Average
		90	25	989.3	1212.5	446.00				Average
		91	26	1257.7	1152.8	437.00				Average
		92	27	1300.0	1094.5	424.00				Average
		93	28	1321.9	951.6	400.00				Average
		93light	29	1334.0	623.8	387.00				
Helix NB	12	55	30	1369.9	-32.2	377.00				Average
		55light	31	1352.0	575.4	387.00				
Rte 94 EB3	12	37	32	513.5	2658.0	411.00				Average
		43	33	1981.7	2291.6	497.00				Average
		49	34	3984.2	1325.8	413.00				
Rte 94 EB2	12	38	35	518	2674.9	412				Average
		44	36	1986.1	2308.5	496				Average
		50	37	3988.7	1342.7	413				
Rte 94 EB1	12	39	38	523.8	2692.2	412				Average
		45	39	1991.9	2325.9	495				Average
		51	40	3994.4	1360.1	413				
Rte 94 WB1	12	52	41	4025.9	1421.5	416				Average
		46	42	1909.1	2419.6	484				Average
		40	43	542	2762.2	413				
Rte 94 WB2	12	53	44	4033.5	1439	416				Average
		47	45	1916.8	2437.2	483				Average
		41	46	549.7	2779.8	413				
Rte 94 WB3	12	54	47	4038.2	1458.4	416				Average
		48	48	1921.4	2456.5	482				Average
		42	49	554.3	2799.1	413				
Kenwood WB1-2	18	point110	50	1365.9	608.4	387	Stop	0	100	Average
		11	51	1350.9	608.4	387				Average
		7	52	1334.9	608.8	387				Average
		3	53	513.3	607.9	376				

Kenwood EB1-2	18	point111	54	1320.4	590.8	387	Stop	0	100	Average
		6	55	1335.4	590.8	387				Average
		10	56	1351.4	590.4	387				Average
		14	57	2183.1	516.8	388				Average
		18	58	2346.6	520.8	392				Average
		22	59	3258.2	691	411				Average
		26	60	3615.2	814.5	411				Average
		30	61	3746.8	893	411				Average
		34	62	4046	1215.9	413				
Helix NB-2	12	point113	63	1352	575.4	387	Stop	0	100	Average
		10	64	1351.4	590.4	387				Average
		11	65	1350.9	608.4	387				Average
		56	66	1337.9	953.1	400				Average
		57	67	1319.2	1099.3	424				Average
		58	68	1270	1171.6	437				Average
		59	69	990.6	1232.4	446				Average
		60	70	867.5	1296	446				Average
		61	71	795.1	1369.8	454				Average
		62	72	760.6	1462.4	461				Average
		63	73	753.4	1569.5	467				Average
		64	74	798.2	1691	465				Average
		65	75	866.3	1801	455				Average
		66	76	953.1	1876.2	455				Average
		67	77	1300.6	2139.6	454				Average
		68	78	1373	2239.4	449				Average
		69	79	1368.6	2329.1	441				Average
		70	80	1329.5	2394.2	434				Average
		71	81	1261.5	2431.8	426				Average
		72	82	850.4	2488.2	410				Average
		73	83	721.5	2468	410				Average
		74	84	562.3	2388.4	407				
Helix SB-2	12	point114	85	1334	623.8	387	Stop	0	100	Average
		7	86	1334.9	608.8	387				Average
		6	87	1335.4	590.8	387				Average
		94	88	1353.9	-32.2	377				

Receivers							Sound Levels		
			Coordinates (pavement)				Calculated Laeq 1hr		
Name	No.	No. of Dwelling Units	x	y	z	Height above ground	With Barrier	Without Barrier	Noise Reduction
			ft	ft	ft	ft	dBA	dBA	dBA
Receiver14	14	1	1178.90	649.80	384.00	5.00	-	64.8	-
R11	15	1	1183.20	791.30	388.50	5.00	-	48.2	-
R12	16	1	1205.20	750.20	387.60	5.00	-	48.7	-
R13	17	1	1205.20	683.60	386.40	5.00	-	54.2	-
R14	18	1	1172.00	664.30	386.00	5.00	-	62.7	-
R15	19	1	1135.70	683.60	386.40	5.00	-	56.4	-
R16	20	1	1159.70	786.30	388.20	5.00	-	47.0	-
R21	21	1	1183.20	791.30	388.50	15.00	-	52.9	-
R22	22	1	1205.20	750.20	387.60	15.00	-	55.6	-
R23	23	1	1205.20	683.60	386.40	15.00	-	58.9	-
R24	24	1	1172.00	664.30	386.00	15.00	-	64.0	-
R25	25	1	1135.70	683.60	386.40	15.00	-	59.7	-
R26	26	1	1159.70	786.30	388.20	15.00	-	50.5	-
Unit 1 Patio	27	1	1205.20	677.10	386.40	5.00	-	57.0	-
Unit 2 Patio	28	1	1205.20	690.10	386.50	5.00	-	52.5	-
Unit 3 Patio	29	1	1205.20	703.10	386.80	5.00	-	50.2	-
Unit 4 Patio	30	1	1205.20	716.10	387.20	5.00	-	49.1	-
Unit 5 Patio	31	1	1205.20	729.10	387.40	5.00	-	49.6	-
Unit 6 Patio	32	1	1205.20	742.10	387.50	5.00	-	48.4	-
Unit 7 Patio	33	1	1205.20	755.10	387.80	5.00	-	48.7	-
Unit 8/ Common Use	34	1	1205.20	775.10	388.00	5.00	-	49.3	-

Roadways	Points											
			Segment									
Name	Name	No.	Autos		Mtrucks		Htrucks		Buses		Motorcycles	
			Volume	Speed	Volume	Speed	Volume	Speed	Volume	Speed	Volume	Speed
			veh/hr	mph								
Kenwood WB1	35	1	213	40	16	40	2	40	0	0	0	0
	31	2	213	40	16	40	2	40	0	0	0	0
	27	3	213	40	16	40	2	40	0	0	0	0
	23	4	213	40	16	40	2	40	0	0	0	0
	19	5	213	40	16	40	2	40	0	0	0	0
	15	6	213	40	16	40	2	40	0	0	0	0
	15stop	7										
Kenwood EB1	2	8	213	40	16	40	2	40	0	0	0	0
	2light	9										
Helix SB	75	10	106	25	8	25	2	25	0	0	0	0
	76	11	106	25	8	25	2	25	0	0	0	0
	77	12	106	25	8	25	2	25	0	0	0	0
	78	13	106	25	8	25	2	25	0	0	0	0
	79	14	106	25	8	25	2	25	0	0	0	0
	80	15	106	25	8	25	2	25	0	0	0	0
	81	16	106	25	8	25	2	25	0	0	0	0
	82	17	106	25	8	25	2	25	0	0	0	0
	83	18	106	25	8	25	2	25	0	0	0	0
	84	19	106	25	8	25	2	25	0	0	0	0
	85	20	106	25	8	25	2	25	0	0	0	0
	86	21	106	25	8	25	2	25	0	0	0	0
	87	22	106	25	8	25	2	25	0	0	0	0
	88	23	106	25	8	25	2	25	0	0	0	0
	89	24	106	25	8	25	2	25	0	0	0	0
	90	25	106	25	8	25	2	25	0	0	0	0
	91	26	106	25	8	25	2	25	0	0	0	0
	92	27	106	25	8	25	2	25	0	0	0	0
	93	28	106	25	8	25	2	25	0	0	0	0
	93light	29										
Helix NB	55	30	106	25	8	25	2	25	0	0	0	0
	55light	31										
Rte 94 EB3	37	32	1194	65	35	65	28	65	0	0	0	0
	43	33	1194	65	35	65	28	65	0	0	0	0
	49	34										
Rte 94 EB2	38	35	1194	65	35	65	28	65	0	0	0	0
	44	36	1194	65	35	65	28	65	0	0	0	0
	50	37										
Rte 94 EB1	39	38	1194	65	35	65	28	65	0	0	0	0
	45	39	1194	65	35	65	28	65	0	0	0	0
	51	40										
Rte 94 WB1	52	41	1249	65	37	65	29	65	0	0	0	0
	46	42	1249	65	37	65	29	65	0	0	0	0
	40	43										
Rte 94 WB2	53	44	1249	65	37	65	29	65	0	0	0	0
	47	45	1249	65	37	65	29	65	0	0	0	0
	41	46										
Rte 94 WB3	54	47	1249	65	37	65	29	65	0	0	0	0
	48	48	1249	65	37	65	29	65	0	0	0	0
	42	49										
Kenwood WB1-2	point110	50	213	40	16	40	2	40	0	0	0	0
	11	51	213	40	16	40	2	40	0	0	0	0
	7	52	213	40	16	40	2	40	0	0	0	0
	3	53										
Kenwood EB1-2	point111	54	213	40	16	40	2	40	0	0	0	0
	6	55	213	40	16	40	2	40	0	0	0	0
	10	56	213	40	16	40	2	40	0	0	0	0
	14	57	213	40	16	40	2	40	0	0	0	0
	18	58	213	40	16	40	2	40	0	0	0	0
	22	59	213	40	16	40	2	40	0	0	0	0
	26	60	213	40	16	40	2	40	0	0	0	0
	30	61	213	40	16	40	2	40	0	0	0	0
	34	62										
Helix NB-2	point113	63	106	25	8	25	2	25	0	0	0	0
	10	64	106	25	8	25	2	25	0	0	0	0
	11	65	106	25	8	25	2	25	0	0	0	0
	56	66	106	25	8	25	2	25	0	0	0	0
	57	67	106	25	8	25	2	25	0	0	0	0
	58	68	106	25	8	25	2	25	0	0	0	0
	59	69	106	25	8	25	2	25	0	0	0	0
	60	70	106	25	8	25	2	25	0	0	0	0
	61	71	106	25	8	25	2	25	0	0	0	0
	62	72	106	25	8	25	2	25	0	0	0	0
	63	73	106	25	8	25	2	25	0	0	0	0
	64	74	106	25	8	25	2	25	0	0	0	0
	65	75	106	25	8	25	2	25	0	0	0	0
	66	76	106	25	8	25	2	25	0	0	0	0
	67	77	106	25	8	25	2	25	0	0	0	0
	68	78	106	25	8	25	2	25	0	0	0	0
	69	79	106	25	8	25	2	25	0	0	0	0
	70	80	106	25	8	25	2	25	0	0	0	0
	71	81	106	25	8	25	2	25	0	0	0	0
	72	82	106	25	8	25	2	25	0	0	0	0
	73	83	106	25	8	25	2	25	0	0	0	0
	74	84										
Helix SB-2	point114	85	106	25	8	25	2	25	0	0	0	0
	7	86	106	25	8	25	2	25	0	0	0	0
	6	87	106	25	8	25	2	25	0	0	0	0

Building Rows			Points			
Name	Average Height	Building Percentage	No.	Coordinates (ground)		
				x	y	z
	ft	%		ft	ft	ft
Kenwood1	15	20	6	1108.0	555.1	380.0
			7	1291.0	555.1	383.0
			8	1291.0	510.6	383.0
			9	1108.0	510.6	380.0
			10	1108.0	554.5	380.0
Helix2	15	20	11	1227.0	778.8	391.0
			12	1227.0	833.8	391.0
			13	1277.0	833.8	391.0
			14	1277.0	778.8	391.0
			15	1227.1	778.8	391.0
Helix1	15	20	16	1077.1	897.0	396.0
			17	1077.1	1077.0	428.0
			18	1248.1	1077.0	428.0
			19	1248.1	897.0	396.0
			20	1079.4	897.0	396.0
kenwood2	15	20	21	1389.0	660.8	387.0
			22	1389.0	727.8	387.0
			23	2123.9	653.8	387
			24	2121.6	593.7	387
			25	1393.7	663.1	387

Barriers				Points									
Name	Type	If berm		Name	No.	Coordinates			Height at point	Segment			On Struct?
		top width	run: rise			x	y	z		Segment height pertubation			
										Incre-ment	# Up	# Dn	
		ft	ft:ft			ft	ft	ft	ft	ft			
adjacent west	W			point2	1.0	1021.90	663.80	384	25	0	0	0	
				point3	2.0	1021.90	748.80	388	25	0	0	0	
				point4	3.0	1071.90	748.80	388	25	0	0	0	
				point5	4.0	1071.90	663.80	384	25	0	0	0	
				point6	5.0	1021.90	663.80	384	25				
adjacent east	W			point6	6.0	1219.00	668.80	385	25	0	0	0	
				point7	7.0	1219.00	724.50	390	25	0	0	0	
				point8	8.0	1249.90	724.50	390	25	0	0	0	
				point9	9.0	1249.90	668.80	385	25	0	0	0	
				point10	10.0	1219.00	668.80	385	25				
fence E	W			point21	21.0	1254.90	750.80	390	6	0	0	0	
				point22	22.0	1254.90	635.00	387	6	0	0	0	
				point24	24.0	1254.90	634.90	387	3	0	0	0	
				point23	23.0	1254.90	627.00	384	3				
kenwood apt bldg	W			point28	28.0	1140.70	670.00	386.2	30	0	0	0	
				point29	29.0	1140.70	760.20	387.7	30	0	0	0	
				point30	30.0	1153.40	760.20	387.7	30	0	0	0	
				point31	31.0	1153.40	770.00	387.8	30	0	0	0	
				point32	32.0	1163.30	770.00	388	30	0	0	0	
				point33	33.0	1163.30	780.00	388.4	30	0	0	0	
				point34	34.0	1179.20	780.00	388.4	30	0	0	0	
				point35	35.0	1179.20	783.30	388.4	30	0	0	0	
				point36	36.0	1200.00	783.30	388.4	30	0	0	0	
				point37	37.0	1200.00	670.00	386.2	30	0	0	0	
				point38	38.0	1140.80	670.00	386.2	30				
patio low wall	W			point39	39.0	1200.10	760.20	387.8	3	0	0	0	
				point40	40.0	1208.50	760.20	387.8	3	0	0	0	
				point41	41.0	1208.50	670.00	386.1	3	0	0	0	
				point42	42.0	1200.10	670.00	386.1	3				
kenwood wall	W			point43	43.0	1125.80	643.00	385	6	0	0	0	
				point44	44.0	1122.20	650.00	385	6	0	0	0	
				point45	45.0	1122.20	781.80	388	6	0	0	0	
				point46	46.0	1124.90	788.30	388	6	0	0	0	
				point47	47.0	1137.20	788.30	388	6	0	0	0	
				point48	48.0	1156.90	807.90	389	6	0	0	0	
				point49	49.0	1215.40	807.90	389	6	0	0	0	
				point50	50.0	1215.40	643.80	385.5	6	0	0	0	
				point51	51.0	1200.00	643.80	385.5	6				
existing house to north	W			point58	52.0	1120.00	832.00	392	15	0	0	0	
				point59	53.0	1120.00	852.00	394	15	0	0	0	
				point60	54.0	1180.00	852.00	394	15	0	0	0	
				point61	55.0	1180.00	832.00	392	15	0	0	0	
				point61	56.0	1120.10	832.00	392	15				

Terrain Lines	Points			
Name	No.	Coordinates (ground)		
		x	y	z
		ft	ft	ft
N/A				

APPENDIX C

Relevant Roadway Information

3	**Kenwood Drive (SC 2122)** Segment: Bancroft Drive to the State Route 94 on/off ramps Existing Condition: 2 lanes (plus turn lanes; 4 lanes near SR 94 on/off ramps) Current Classification: Collector Road (4 lanes)	**Downgrade Classification** 2.2D Light Collector with Improvement Options (2+ lanes) *Intermittent Turn Lanes are the preferred improvement option.*	• *Road Capacity* – Two lanes with intermittent turn lanes are sufficient to operate at LOS D or better. The turn lane on Kenwood Drive (for east bound traffic on State Route 94) should be improved to accommodate more vehicles to avoid queuing during peak commute periods. **Note: Caltrans coordination is required to make the interchange operational improvements.**
4	**Broadway/Campo Road (SA 1010)** Segment: From the City of Lemon Grove boundary to State Route 94 (Valle de Oro) Existing Condition: 2 lanes Current Classification: Major Road (4+ lanes)	**Equivalent Classification** 4.1A Major Road with Raised Median (4+ lanes)	• *Road Capacity*- Four lanes are necessary to operate at LOS D or better.
5	**Sweetwater Road (SF 1269)** Segment: From the City of Lemon Grove boundary to Jamacha Boulevard. Existing Condition: 4 lanes (with a continuous turn lane and dedicated turn lanes) Current Classification: Prime Arterial (6 lanes) from the City of Lemon Grove to Troy Street; and Collector Road (4 lanes, with intermittent turn lanes) from Troy Street to Jamacha Boulevard.	**Downgrade Classification/ Equivalent Classification** 4.1B Major Road with Intermittent Turn Lanes (4+ lanes) *Only a small segment of the northern portion of the road (from the City of Lemon Grove to Troy Street) is recommended to be downgraded from a Prime Arterial to a Major Road.*	• *Road Capacity* – a 4-lane road is required to operate at LOS D or better.

APPENDIX D

Exterior-to-Interior Noise Analysis

EXTERIOR TO INTERIOR NOISE REDUCTION ANALYSIS

Kenwood Apartment
A61042N1
Bedroom (east) - Unit 1

Wall 1 of 2

Room Type : **Soft**

	125 Hz	250 Hz	500 Hz	1KHz	2KHz	4KHz	
Reverberation Time (sec) :	0.8	0.8	0.8	0.8	0.7	0.7	: Highly Absorptive Room
Room Absorption (Sabins) :	80	80	80	80	101	101	

		Noise Level		125 Hz	250 Hz	500 Hz	1KHz	2KHz	4KHz	
Source 1:	**Traffic**	**66.0**	**CNEL**	49.3	54.8	57.3	61.3	61.3	55.3	: Traffic Spectrum
Source 2:	**<N/A>**	**0.0**	**CNEL**	0.0	0.0	0.0	0.0	0.0	0.0	
Source 3:	**<N/A>**	**0.0**	**CNEL**	0.0	0.0	0.0	0.0	0.0	0.0	
Source 4:	**<N/A>**	**0.0**	**CNEL**	0.0	0.0	0.0	0.0	0.0	0.0	
Overall:		**66.0**	**CNEL**	49.3	54.8	57.3	61.3	61.3	55.3	: Effective Noise Spectrum

Assembly Type	Open	Width	Height	Qty	Total Area	125 Hz	250 Hz	500 Hz	1KHz	2KHz	4KHz
STC 44 Typical Exterior Wall	N	13.625	8	1	89.9	29	39	44	43	42	49
STC 28 1/2-inch Dual Insulating Window	Y	5.8	3.3	1	19.1	23	23	22	32	43	37
<N/A>	N	0	0	0	0.0	0	0	0	0	0	0
<N/A>	N	0	0	0	0.0	0	0	0	0	0	0
<N/A>	N	0	0	0	0.0	0	0	0	0	0	0
<N/A>	N	0	0	0	0.0	0	0	0	0	0	0
<N/A>	N	0	0	0	0.0	0	0	0	0	0	0
<N/A>	N	0	0	0	0.0	0	0	0	0	0	0
<N/A>	N	0	0	0	0.0	0	0	0	0	0	0
<N/A>	N	0	0	0	0.0	0	0	0	0	0	0
<N/A>	N	0	0	0	0.0	0	0	0	0	0	0
<N/A>	N	0	0	0	0.0	0	0	0	0	0	0

Room Depth: **12.3** ft **Overall Area:** **109** ft²
Volume: **1341** ft³

Number of Impacted Walls: **2**

Windows Open		
Interior Noise Level:	**47.7**	**CNEL**
Windows Closed		
Interior Noise Level:	**33.7**	**CNEL**

125 Hz	250 Hz	500 Hz	1KHz	2KHz	4KHz	
49.3	54.8	57.3	61.3	61.3	55.3	: Exterior Wall Noise Exposure
10.5	10.5	10.5	10.6	10.6	10.6	: Transmission Loss
0.0	0.0	0.0	0.0	0.0	0.0	: Noise Reduction
19.1	19.1	19.1	19.1	20.0	20.0	: Absorption
30.3	35.8	38.3	42.3	41.3	35.3	: Noise Level

46.5 CNEL WINDOWS OPEN

125 Hz	250 Hz	500 Hz	1KHz	2KHz	4KHz	
49.3	54.8	57.3	61.3	61.3	55.3	: Exterior Wall Noise Exposure
27.1	30.0	29.5	38.4	42.1	43.7	: Transmission Loss
6.7	9.6	9.1	18.0	21.7	23.3	: Noise Reduction
19.1	19.1	19.1	19.1	20.0	20.0	: Absorption
23.5	26.2	29.1	24.2	19.6	12.0	: Noise Level

32.6 CNEL WINDOWS CLOSED

1/8

EXTERIOR TO INTERIOR NOISE REDUCTION ANALYSIS

Kenwood Apartment
A61042N1
Bedroom (east) - Unit 1

Wall 2 of 2

		Noise Level		125 Hz	250 Hz	500 Hz	1KHz	2KHz	4KHz	
Source 1:	Traffic	60.9	CNEL	44.2	49.7	52.2	56.2	56.2	50.2	: Traffic Spectrum
Source 2:	<N/A>	0.0	CNEL	0.0	0.0	0.0	0.0	0.0	0.0	
Source 3:	<N/A>	0.0	CNEL	0.0	0.0	0.0	0.0	0.0	0.0	
Source 4:	<N/A>	0.0	CNEL	0.0	0.0	0.0	0.0	0.0	0.0	
Overall:		60.9	CNEL	44.2	49.7	52.2	56.2	56.2	50.2	: Effective Noise Spectrum

Assembly Type	Open	Width	Height	Qty	Total Area	125 Hz	250 Hz	500 Hz	1KHz	2KHz	4KHz
STC 44 Typical Exterior Wall	N	11.3	8	1	71.3	29	39	44	43	42	49
STC 28 1/2-inch Dual Insulating Window	Y	5.8	3.3	1	19.1	23	23	22	32	43	37
<N/A>	N	0	0	0	0.0	0	0	0	0	0	0
<N/A>	N	0	0	0	0.0	0	0	0	0	0	0
<N/A>	N	0	0	0	0.0	0	0	0	0	0	0
<N/A>	N	0	0	0	0.0	0	0	0	0	0	0
<N/A>	N	0	0	0	0.0	0	0	0	0	0	0
<N/A>	N	0	0	0	0.0	0	0	0	0	0	0
<N/A>	N	0	0	0	0.0	0	0	0	0	0	0
<N/A>	N	0	0	0	0.0	0	0	0	0	0	0
<N/A>	N	0	0	0	0.0	0	0	0	0	0	0
<N/A>	N	0	0	0	0.0	0	0	0	0	0	0

Overall Area: 90.4 ft²

125 Hz	250 Hz	500 Hz	1KHz	2KHz	4KHz	
44.2	49.7	52.2	56.2	56.2	50.2	: Exterior Wall Noise Exposure
9.7	9.7	9.7	9.7	9.8	9.8	: Transmission Loss
0.0	0.0	0.0	0.0	0.0	0.0	: Noise Reduction
19.1	19.1	19.1	19.1	20.0	20.0	: Absorption
25.2	30.7	33.2	37.2	36.2	30.2	: Noise Level
41.4	CNEL	WINDOWS OPEN				

125 Hz	250 Hz	500 Hz	1KHz	2KHz	4KHz	
44.2	49.7	52.2	56.2	56.2	50.2	: Exterior Wall Noise Exposure
26.8	29.2	28.7	37.9	42.1	43.1	: Transmission Loss
7.2	9.7	9.2	18.3	22.6	23.5	: Noise Reduction
19.1	19.1	19.1	19.1	20.0	20.0	: Absorption
17.9	21.0	24.0	18.8	13.6	6.7	: Noise Level
27.3	CNEL	WINDOWS CLOSED				

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EXTERIOR TO INTERIOR NOISE REDUCTION ANALYSIS

Kenwood Apartment
A61042N1
Bedroom (west) - Unit 1

Wall 1 of 2

Room Type : **Soft**

	125 Hz	250 Hz	500 Hz	1KHz	2KHz	4KHz	
Reverberation Time (sec) :	0.8	0.8	0.8	0.8	0.7	0.7	: Highly Absorptive Room
Room Absorption (Sabins) :	94	94	94	94	117	117	

		Noise Level		125 Hz	250 Hz	500 Hz	1KHz	2KHz	4KHz	
Source 1:	**Traffic**	**66.0**	**CNEL**	49.3	54.8	57.3	61.3	61.3	55.3	: Traffic Spectrum
Source 2:	**<N/A>**	**0.0**	**CNEL**	0.0	0.0	0.0	0.0	0.0	0.0	
Source 3:	**<N/A>**	**0.0**	**CNEL**	0.0	0.0	0.0	0.0	0.0	0.0	
Source 4:	**<N/A>**	**0.0**	**CNEL**	0.0	0.0	0.0	0.0	0.0	0.0	
Overall:		**66.0**	**CNEL**	49.3	54.8	57.3	61.3	61.3	55.3	: Effective Noise Spectrum

Assembly Type	Open	Width	Height	Qty	Total Area	125 Hz	250 Hz	500 Hz	1KHz	2KHz	4KHz
STC 44 Typical Exterior Wall	N	13.625	8	1	89.9	29	39	44	43	42	49
STC 28 insulating window (for 60-62 dBA)	Y	5.8	3.3	1	19.1	23	23	22	32	43	37
<N/A>	N	0	0	0	0.0	0	0	0	0	0	0
<N/A>	N	0	0	0	0.0	0	0	0	0	0	0
<N/A>	N	0	0	0	0.0	0	0	0	0	0	0
<N/A>	N	0	0	0	0.0	0	0	0	0	0	0
<N/A>	N	0	0	0	0.0	0	0	0	0	0	0
<N/A>	N	0	0	0	0.0	0	0	0	0	0	0
<N/A>	N	0	0	0	0.0	0	0	0	0	0	0
<N/A>	N	0	0	0	0.0	0	0	0	0	0	0
<N/A>	N	0	0	0	0.0	0	0	0	0	0	0
<N/A>	N	0	0	0	0.0	0	0	0	0	0	0

Room Depth: **14.3** ft **Overall Area:** **109** ft²
Volume: **1559** ft³

Number of Impacted Walls: **2**

Windows Open
Interior Noise Level: **47.3** **CNEL**

Windows Closed
Interior Noise Level: **33.3** **CNEL**

125 Hz	250 Hz	500 Hz	1KHz	2KHz	4KHz	
49.3	54.8	57.3	61.3	61.3	55.3	: Exterior Wall Noise Exposure
10.5	10.5	10.5	10.6	10.6	10.6	: Transmission Loss
0.0	0.0	0.0	0.0	0.0	0.0	: Noise Reduction
19.7	19.7	19.7	19.7	20.7	20.7	: Absorption
29.6	35.1	37.6	41.6	40.6	34.6	: Noise Level

45.9 CNEL WINDOWS OPEN

125 Hz	250 Hz	500 Hz	1KHz	2KHz	4KHz	
49.3	54.8	57.3	61.3	61.3	55.3	: Exterior Wall Noise Exposure
27.1	30.0	29.5	38.4	42.1	43.7	: Transmission Loss
6.8	9.6	9.2	18.0	21.7	23.3	: Noise Reduction
19.7	19.7	19.7	19.7	20.7	20.7	: Absorption
22.8	25.5	28.4	23.6	18.9	11.3	: Noise Level

31.9 CNEL WINDOWS CLOSED

EXTERIOR TO INTERIOR NOISE REDUCTION ANALYSIS

Kenwood Apartment
A61042N1
Bedroom (west) - Unit 1

Wall 2 of 2

		Noise Level		125 Hz	250 Hz	500 Hz	1KHz	2KHz	4KHz	
Source 1:	Traffic	61.7	CNEL	45.0	50.5	53.0	57.0	57.0	51.0	: Traffic Spectrum
Source 2:	<N/A>	0.0	CNEL	0.0	0.0	0.0	0.0	0.0	0.0	
Source 3:	<N/A>	0.0	CNEL	0.0	0.0	0.0	0.0	0.0	0.0	
Source 4:	<N/A>	0.0	CNEL	0.0	0.0	0.0	0.0	0.0	0.0	
Overall:		61.7	CNEL	45.0	50.5	53.0	57.0	57.0	51.0	: Effective Noise Spectrum

Assembly Type	Open	Width	Height	Qty	Total Area	125 Hz	250 Hz	500 Hz	1KHz	2KHz	4KHz
STC 44 Typical Exterior Wall	N	13	8	1	84.9	29	39	44	43	42	49
STC 28 1/2-inch Dual Insulating Window	Y	5.8	3.3	1	19.1	23	23	22	32	43	37
<N/A>	N	0	0	0	0.0	0	0	0	0	0	0
<N/A>	N	0	0	0	0.0	0	0	0	0	0	0
<N/A>	N	0	0	0	0.0	0	0	0	0	0	0
<N/A>	N	0	0	0	0.0	0	0	0	0	0	0
<N/A>	N	0	0	0	0.0	0	0	0	0	0	0
<N/A>	N	0	0	0	0.0	0	0	0	0	0	0
<N/A>	N	0	0	0	0.0	0	0	0	0	0	0
<N/A>	N	0	0	0	0.0	0	0	0	0	0	0
<N/A>	N	0	0	0	0.0	0	0	0	0	0	0
<N/A>	N	0	0	0	0.0	0	0	0	0	0	0

Overall Area: 104 ft²

125 Hz	250 Hz	500 Hz	1KHz	2KHz	4KHz	
45.0	50.5	53.0	57.0	57.0	51.0	: Exterior Wall Noise Exposure
10.3	10.3	10.3	10.4	10.4	10.4	: Transmission Loss
0.0	0.0	0.0	0.0	0.0	0.0	: Noise Reduction
19.7	19.7	19.7	19.7	20.7	20.7	: Absorption
25.3	30.8	33.3	37.3	36.3	30.3	: Noise Level
41.6	CNEL	WINDOWS OPEN				

125 Hz	250 Hz	500 Hz	1KHz	2KHz	4KHz	
45.0	50.5	53.0	57.0	57.0	51.0	: Exterior Wall Noise Exposure
27.0	29.8	29.3	38.3	42.1	43.5	: Transmission Loss
6.9	9.6	9.1	18.1	21.9	23.4	: Noise Reduction
19.7	19.7	19.7	19.7	20.7	20.7	: Absorption
18.4	21.2	24.2	19.2	14.4	7.0	: Noise Level
27.6	CNEL	WINDOWS CLOSED				

EXTERIOR TO INTERIOR NOISE REDUCTION ANALYSIS

Kenwood Apartment
A61042N1
Living/ Dining Room - Unit 8

Wall 1 of 2

	125 Hz	250 Hz	500 Hz	1KHz	2KHz	4KHz	
Room Type : **Moderate**							
Reverberation Time (sec) :	1.2	1.2	1.2	1.2	1.0	1.0	: Moderately Reflective Room
Room Absorption (Sabins) :	172	172	172	172	215	215	

		Noise Level		125 Hz	250 Hz	500 Hz	1KHz	2KHz	4KHz	
Source 1:	**Traffic**	**52.5**	**CNEL**	35.8	41.3	43.8	47.8	47.8	41.8	: Traffic Spectrum
Source 2:	**<N/A>**	**0.0**	**CNEL**	0.0	0.0	0.0	0.0	0.0	0.0	
Source 3:	**<N/A>**	**0.0**	**CNEL**	0.0	0.0	0.0	0.0	0.0	0.0	
Source 4:	**<N/A>**	**0.0**	**CNEL**	0.0	0.0	0.0	0.0	0.0	0.0	
Overall:		**52.5**	**CNEL**	35.8	41.3	43.8	47.8	47.8	41.8	: Effective Noise Spectrum

Assembly Type	Open	Width	Height	Qty	Total Area	125 Hz	250 Hz	500 Hz	1KHz	2KHz	4KHz
STC 44 Typical Exterior Wall	N	25.2	8	1	135.0	29	39	44	43	42	49
STC 28 insulating window (for 60-62 dBA)	Y	4.7	3.3	3	46.5	23	23	22	32	43	37
STC 28 French Door with seals	N	3	6.7	1	20.1	23	23	22	32	43	37
<N/A>	N	0	0	0	0.0	0	0	0	0	0	0
<N/A>	N	0	0	0	0.0	0	0	0	0	0	0
<N/A>	N	0	0	0	0.0	0	0	0	0	0	0
<N/A>	N	0	0	0	0.0	0	0	0	0	0	0
<N/A>	N	0	0	0	0.0	0	0	0	0	0	0
<N/A>	N	0	0	0	0.0	0	0	0	0	0	0
<N/A>	N	0	0	0	0.0	0	0	0	0	0	0
<N/A>	N	0	0	0	0.0	0	0	0	0	0	0
<N/A>	N	0	0	0	0.0	0	0	0	0	0	0

Room Depth: 21.3 ft **Overall Area:** 201.6 ft^2
Volume: 4294 ft^3

Number of Impacted Walls: 2

Windows Open		
Interior Noise Level:	**34.1**	**CNEL**
Windows Closed		
Interior Noise Level:	**22.2**	**CNEL**

125 Hz	250 Hz	500 Hz	1KHz	2KHz	4KHz	
35.8	41.3	43.8	47.8	47.8	41.8	: Exterior Wall Noise Exposure
9.3	9.3	9.3	9.4	9.4	9.4	: Transmission Loss
0.0	0.0	0.0	0.0	0.0	0.0	: Noise Reduction
22.3	22.3	22.3	22.3	23.3	23.3	: Absorption
13.5	19.0	21.5	25.5	24.5	18.5	: Noise Level
29.7	CNEL	WINDOWS OPEN				

125 Hz	250 Hz	500 Hz	1KHz	2KHz	4KHz	
35.8	41.3	43.8	47.8	47.8	41.8	: Exterior Wall Noise Exposure
26.0	27.5	26.8	36.4	42.2	41.6	: Transmission Loss
2.9	4.4	3.8	13.4	19.1	18.5	: Noise Reduction
22.3	22.3	22.3	22.3	23.3	23.3	: Absorption
10.6	14.5	17.7	12.1	5.3	0.0	: Noise Level
20.7	CNEL	WINDOWS CLOSED				

EXTERIOR TO INTERIOR NOISE REDUCTION ANALYSIS

Kenwood Apartment
A61042N1
Living/ Dining Room - Unit 8

Wall 2 of 2

		Noise Level		125 Hz	250 Hz	500 Hz	1KHz	2KHz	4KHz	
Source 1:	Traffic	54.9	CNEL	38.2	43.7	46.2	50.2	50.2	44.2	: Traffic Spectrum
Source 2:	<N/A>	0.0	CNEL	0.0	0.0	0.0	0.0	0.0	0.0	
Source 3:	<N/A>	0.0	CNEL	0.0	0.0	0.0	0.0	0.0	0.0	
Source 4:	<N/A>	0.0	CNEL	0.0	0.0	0.0	0.0	0.0	0.0	
Overall:		54.9	CNEL	38.2	43.7	46.2	50.2	50.2	44.2	: Effective Noise Spectrum

Assembly Type	Open	Width	Height	Qty	Total Area	125 Hz	250 Hz	500 Hz	1KHz	2KHz	4KHz
STC 44 Typical Exterior Wall	N	13.9	8	1	98.7	29	39	44	43	42	49
STC 28 1/2-inch Dual Insulating Window	Y	3.8	3.3	1	12.5	23	23	22	32	43	37
<N/A>	N	0	0	0	0.0	0	0	0	0	0	0
<N/A>	N	0	0	0	0.0	0	0	0	0	0	0
<N/A>	N	0	0	0	0.0	0	0	0	0	0	0
<N/A>	N	0	0	0	0.0	0	0	0	0	0	0
<N/A>	N	0	0	0	0.0	0	0	0	0	0	0
<N/A>	N	0	0	0	0.0	0	0	0	0	0	0
<N/A>	N	0	0	0	0.0	0	0	0	0	0	0
<N/A>	N	0	0	0	0.0	0	0	0	0	0	0
<N/A>	N	0	0	0	0.0	0	0	0	0	0	0
<N/A>	N	0	0	0	0.0	0	0	0	0	0	0

Overall Area: 111.2 ft²

125 Hz	250 Hz	500 Hz	1KHz	2KHz	4KHz	
38.2	43.7	46.2	50.2	50.2	44.2	: Exterior Wall Noise Exposure
12.4	12.5	12.5	12.5	12.5	12.5	: Transmission Loss
0.0	0.0	0.0	0.0	0.0	0.0	: Noise Reduction
22.3	22.3	22.3	22.3	23.3	23.3	: Absorption
15.9	21.4	23.9	27.9	26.9	20.9	: Noise Level

32.1 CNEL WINDOWS OPEN

125 Hz	250 Hz	500 Hz	1KHz	2KHz	4KHz	
38.2	43.7	46.2	50.2	50.2	44.2	: Exterior Wall Noise Exposure
27.7	31.6	31.3	39.6	42.1	44.9	: Transmission Loss
7.2	11.1	10.9	19.1	21.6	24.5	: Noise Reduction
22.3	22.3	22.3	22.3	23.3	23.3	: Absorption
8.6	10.2	13.0	8.7	5.3	0.0	: Noise Level

16.9 CNEL WINDOWS CLOSED

EXTERIOR TO INTERIOR NOISE REDUCTION ANALYSIS

Kenwood Apartment
A61042N1
Living/ Dining Room - Unit 1

Wall 1 of 2

Room Type : **Moderate**

	125 Hz	250 Hz	500 Hz	1KHz	2KHz	4KHz	
Reverberation Time (sec) :	1.2	1.2	1.2	1.2	1.0	1.0	: Moderately Reflective Room
Room Absorption (Sabins) :	148	148	148	148	185	185	

		Noise Level		125 Hz	250 Hz	500 Hz	1KHz	2KHz	4KHz	
Source 1:	**Traffic**	**64.7**	**CNEL**	48.0	53.5	56.0	60.0	60.0	54.0	: Traffic Spectrum
Source 2:	**<N/A>**	**0.0**	**CNEL**	0.0	0.0	0.0	0.0	0.0	0.0	
Source 3:	**<N/A>**	**0.0**	**CNEL**	0.0	0.0	0.0	0.0	0.0	0.0	
Source 4:	**<N/A>**	**0.0**	**CNEL**	0.0	0.0	0.0	0.0	0.0	0.0	
Overall:		**64.7**	**CNEL**	48.0	53.5	56.0	60.0	60.0	54.0	: Effective Noise Spectrum

Assembly Type	Open	Width	Height	Qty	Total Area	125 Hz	250 Hz	500 Hz	1KHz	2KHz	4KHz
STC 44 Typical Exterior Wall	N	36.4	8	1	266.1	29	39	44	43	42	49
STC 28 insulating window (for 60-62 dBA)	Y	3.8	3.3	2	25.1	23	23	22	32	43	37
<N/A>	N	0	0	0	0.0	0	0	0	0	0	0
<N/A>	N	0	0	0	0.0	0	0	0	0	0	0
<N/A>	N	0	0	0	0.0	0	0	0	0	0	0
<N/A>	N	0	0	0	0.0	0	0	0	0	0	0
<N/A>	N	0	0	0	0.0	0	0	0	0	0	0
<N/A>	N	0	0	0	0.0	0	0	0	0	0	0
<N/A>	N	0	0	0	0.0	0	0	0	0	0	0
<N/A>	N	0	0	0	0.0	0	0	0	0	0	0
<N/A>	N	0	0	0	0.0	0	0	0	0	0	0
<N/A>	N	0	0	0	0.0	0	0	0	0	0	0

Room Depth: 12.7 ft **Overall Area:** 291.2 ft²
Volume: 3698 ft³

Number of Impacted Walls: 2

Windows Open		
Interior Noise Level:	**43.2**	**CNEL**
Windows Closed		
Interior Noise Level:	**32.0**	**CNEL**

125 Hz	250 Hz	500 Hz	1KHz	2KHz	4KHz	
48.0	53.5	56.0	60.0	60.0	54.0	: Exterior Wall Noise Exposure
13.5	13.6	13.6	13.7	13.7	13.7	: Transmission Loss
0.0	0.0	0.0	0.0	0.0	0.0	: Noise Reduction
21.7	21.7	21.7	21.7	22.7	22.7	: Absorption
26.3	31.8	34.3	38.3	37.3	31.3	: Noise Level
42.6	CNEL	WINDOWS OPEN				

125 Hz	250 Hz	500 Hz	1KHz	2KHz	4KHz	
48.0	53.5	56.0	60.0	60.0	54.0	: Exterior Wall Noise Exposure
28.0	32.5	32.5	40.2	42.0	45.6	: Transmission Loss
3.3	7.9	7.8	15.5	17.4	21.0	: Noise Reduction
21.7	21.7	21.7	21.7	22.7	22.7	: Absorption
23.0	23.9	26.5	22.8	19.9	10.4	: Noise Level
30.8	CNEL	WINDOWS CLOSED				

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EXTERIOR TO INTERIOR NOISE REDUCTION ANALYSIS

Kenwood Apartment
A61042N1
Living/ Dining Room - Unit 1

Wall 2 of 2

		Noise Level		125 Hz	250 Hz	500 Hz	1KHz	2KHz	4KHz	
Source 1:	Traffic	56.2	CNEL	39.5	45.0	47.5	51.5	51.5	45.5	: Traffic Spectrum
Source 2:	<N/A>	0.0	CNEL	0.0	0.0	0.0	0.0	0.0	0.0	
Source 3:	<N/A>	0.0	CNEL	0.0	0.0	0.0	0.0	0.0	0.0	
Source 4:	<N/A>	0.0	CNEL	0.0	0.0	0.0	0.0	0.0	0.0	
Overall:		56.2	CNEL	39.5	45.0	47.5	51.5	51.5	45.5	: Effective Noise Spectrum

Assembly Type	Open	Width	Height	Qty	Total Area	125 Hz	250 Hz	500 Hz	1KHz	2KHz	4KHz
STC 44 Typical Exterior Wall	N	13.7	8	1	57.3	29	39	44	43	42	49
STC 28 1/2-inch Dual Insulating Window	Y	7	4.6	1	32.2	23	23	22	32	43	37
1 3/4" Thick Solid Core Door	N	3	6.7	1	20.1	18	22	26	24	23	20
<N/A>	N	0	0	0	0.0	0	0	0	0	0	0
<N/A>	N	0	0	0	0.0	0	0	0	0	0	0
<N/A>	N	0	0	0	0.0	0	0	0	0	0	0
<N/A>	N	0	0	0	0.0	0	0	0	0	0	0
<N/A>	N	0	0	0	0.0	0	0	0	0	0	0
<N/A>	N	0	0	0	0.0	0	0	0	0	0	0
<N/A>	N	0	0	0	0.0	0	0	0	0	0	0
<N/A>	N	0	0	0	0.0	0	0	0	0	0	0
<N/A>	N	0	0	0	0.0	0	0	0	0	0	0

Overall Area: 109.6 ft²

125 Hz	250 Hz	500 Hz	1KHz	2KHz	4KHz	
39.5	45.0	47.5	51.5	51.5	45.5	: Exterior Wall Noise Exposure
8.2	8.3	8.3	8.3	8.3	8.3	: Transmission Loss
0.0	0.0	0.0	0.0	0.0	0.0	: Noise Reduction
21.7	21.7	21.7	21.7	22.7	22.7	: Absorption
17.8	23.3	25.8	29.8	28.8	22.8	: Noise Level
34.1	CNEL	WINDOWS OPEN				

125 Hz	250 Hz	500 Hz	1KHz	2KHz	4KHz	
39.5	45.0	47.5	51.5	51.5	45.5	: Exterior Wall Noise Exposure
22.9	25.6	26.4	30.3	30.1	27.2	: Transmission Loss
2.5	5.2	6.0	9.9	9.7	6.8	: Noise Reduction
21.7	21.7	21.7	21.7	22.7	22.7	: Absorption
15.3	18.1	19.8	19.9	19.1	16.0	: Noise Level
26.2	CNEL	WINDOWS CLOSED				

EXTERIOR TO INTERIOR NOISE REDUCTION ANALYSIS

Kenwood Apartment
A61042N1
Bedroom2 (west) - Unit 2

Wall 1 of 1

Room Type : **Soft**

	125 Hz	250 Hz	500 Hz	1KHz	2KHz	4KHz	
Reverberation Time (sec) :	0.8	0.8	0.8	0.8	0.7	0.7	: Highly Absorptive Room
Room Absorption (Sabins) :	89	89	89	89	112	112	

		Noise Level		125 Hz	250 Hz	500 Hz	1KHz	2KHz	4KHz	
Source 1:	**Traffic**	**61.7**	**CNEL**	45.0	50.5	53.0	57.0	57.0	51.0	: Traffic Spectrum
Source 2:	**<N/A>**	**0.0**	**CNEL**	0.0	0.0	0.0	0.0	0.0	0.0	
Source 3:	**<N/A>**	**0.0**	**CNEL**	0.0	0.0	0.0	0.0	0.0	0.0	
Source 4:	**<N/A>**	**0.0**	**CNEL**	0.0	0.0	0.0	0.0	0.0	0.0	
Overall:		**61.7**	**CNEL**	45.0	50.5	53.0	57.0	57.0	51.0	: Effective Noise Spectrum

Assembly Type	Open	Width	Height	Qty	Total Area	125 Hz	250 Hz	500 Hz	1KHz	2KHz	4KHz
STC 44 Typical Exterior Wall	N	13	8	1	84.9	29	39	44	43	42	49
STC 28 insulating window (for 60-62 dBA)	Y	5.8	3.3	1	19.1	23	23	22	32	43	37
<N/A>	N	0	0	0	0.0	0	0	0	0	0	0
<N/A>	N	0	0	0	0.0	0	0	0	0	0	0
<N/A>	N	0	0	0	0.0	0	0	0	0	0	0
<N/A>	N	0	0	0	0.0	0	0	0	0	0	0
<N/A>	N	0	0	0	0.0	0	0	0	0	0	0
<N/A>	N	0	0	0	0.0	0	0	0	0	0	0
<N/A>	N	0	0	0	0.0	0	0	0	0	0	0
<N/A>	N	0	0	0	0.0	0	0	0	0	0	0
<N/A>	N	0	0	0	0.0	0	0	0	0	0	0
<N/A>	N	0	0	0	0.0	0	0	0	0	0	0

Room Depth: 14.3 ft **Overall Area:** **104** ft²
Volume: **1487** ft³

Number of Impacted Walls: **1**

Windows Open		
Interior Noise Level:	**41.8**	**CNEL**
Windows Closed		
Interior Noise Level:	**27.8**	**CNEL**

125 Hz	250 Hz	500 Hz	1KHz	2KHz	4KHz	
45.0	50.5	53.0	57.0	57.0	51.0	: Exterior Wall Noise Exposure
10.3	10.3	10.3	10.4	10.4	10.4	: Transmission Loss
0.0	0.0	0.0	0.0	0.0	0.0	: Noise Reduction
19.5	19.5	19.5	19.5	20.5	20.5	: Absorption
25.5	31.0	33.5	37.5	36.5	30.5	: Noise Level
41.8	**CNEL**	WINDOWS OPEN				

125 Hz	250 Hz	500 Hz	1KHz	2KHz	4KHz	
45.0	50.5	53.0	57.0	57.0	51.0	: Exterior Wall Noise Exposure
27.1	29.8	29.3	38.3	42.1	43.5	: Transmission Loss
6.9	9.6	9.2	18.1	21.9	23.3	: Noise Reduction
19.5	19.5	19.5	19.5	20.5	20.5	: Absorption
18.6	21.4	24.3	19.4	14.6	7.2	: Noise Level
27.8	**CNEL**	WINDOWS CLOSED				

1/2

EXTERIOR TO INTERIOR NOISE REDUCTION ANALYSIS

Kenwood Apartment
A61042N1
Bedroom1 (east) - Unit 2

Wall 1 of 1

Room Type : **Soft**

	125 Hz	250 Hz	500 Hz	1KHz	2KHz	4KHz	
Reverberation Time (sec) :	0.8	0.8	0.8	0.8	0.7	0.7	: Highly Absorptive Room
Room Absorption (Sabins) :	67	67	67	67	83	83	

		Noise Level		125 Hz	250 Hz	500 Hz	1KHz	2KHz	4KHz	
Source 1:	**Traffic**	**60.9**	**CNEL**	44.2	49.7	52.2	56.2	56.2	50.2	: Traffic Spectrum
Source 2:	**<N/A>**	**0.0**	**CNEL**	0.0	0.0	0.0	0.0	0.0	0.0	
Source 3:	**<N/A>**	**0.0**	**CNEL**	0.0	0.0	0.0	0.0	0.0	0.0	
Source 4:	**<N/A>**	**0.0**	**CNEL**	0.0	0.0	0.0	0.0	0.0	0.0	
Overall:		**60.9**	**CNEL**	44.2	49.7	52.2	56.2	56.2	50.2	: Effective Noise Spectrum

Assembly Type	Open	Width	Height	Qty	Total Area	125 Hz	250 Hz	500 Hz	1KHz	2KHz	4KHz
STC 44 Typical Exterior Wall	N	11.3	8	1	71.3	29	39	44	43	42	49
STC 28 1/2-inch Dual Insulating Window	Y	5.8	3.3	1	19.1	23	23	22	32	43	37
<N/A>	N	0	0	0	0.0	0	0	0	0	0	0
<N/A>	N	0	0	0	0.0	0	0	0	0	0	0
<N/A>	N	0	0	0	0.0	0	0	0	0	0	0
<N/A>	N	0	0	0	0.0	0	0	0	0	0	0
<N/A>	N	0	0	0	0.0	0	0	0	0	0	0
<N/A>	N	0	0	0	0.0	0	0	0	0	0	0
<N/A>	N	0	0	0	0.0	0	0	0	0	0	0
<N/A>	N	0	0	0	0.0	0	0	0	0	0	0
<N/A>	N	0	0	0	0.0	0	0	0	0	0	0
<N/A>	N	0	0	0	0.0	0	0	0	0	0	0

Room Depth: **12.3** ft **Overall Area:** **90.4** ft²
Volume: **1112** ft³

Number of Impacted Walls: **1**

Windows Open		
Interior Noise Level:	**42.3**	**CNEL**
Windows Closed		
Interior Noise Level:	**28.2**	**CNEL**

125 Hz	250 Hz	500 Hz	1KHz	2KHz	4KHz	
44.2	49.7	52.2	56.2	56.2	50.2	: Exterior Wall Noise Exposure
9.7	9.7	9.7	9.7	9.8	9.8	: Transmission Loss
0.0	0.0	0.0	0.0	0.0	0.0	: Noise Reduction
18.2	18.2	18.2	18.2	19.2	19.2	: Absorption
26.0	31.5	34.0	38.0	37.0	31.0	: Noise Level

42.3 **CNEL** WINDOWS OPEN

125 Hz	250 Hz	500 Hz	1KHz	2KHz	4KHz	
44.2	49.7	52.2	56.2	56.2	50.2	: Exterior Wall Noise Exposure
26.8	29.2	28.7	37.9	42.1	43.1	: Transmission Loss
7.2	9.7	9.2	18.3	22.6	23.5	: Noise Reduction
18.2	18.2	18.2	18.2	19.2	19.2	: Absorption
18.7	21.8	24.8	19.7	14.4	7.5	: Noise Level

28.2 **CNEL** WINDOWS CLOSED

2/2

APPENDIX E

Sound Insulation Prediction Results

Sound Insulation Prediction (v6.1)

Margin of error is generally within +/- 3STC

Job Name:Kenwood Apartment

Notes:

Job No.:A61042N

Page No.:

Projected Exterior Wall Design

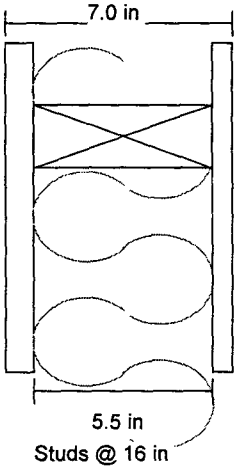
Date: 5 Dec 06

Initials:DS

File Name:kenwood ext wall.ins

1 x 0.9 in Fibre Cement

1 x 0.6 in Type X Gypsum Board



STC 44

OITC 40

Surface Mass 7.1 lb/ft2

Critical Freq 1350 Hz

damping 0.01

fo =56 Hz

Surface Mass 2.2 lb/ft2

Critical Freq 2511 Hz

damping 0.01

Panel Size 8.9x13 ft

Infill 3" fiberglass (0.6 lb/ft3) Thickness 5.5 in

frequency (Hz)	TL(dB)	TL(dB)
50	19	
63	22	21
80	28	
100	31	
125	34	33
160	36	
200	38	
250	40	39
315	41	
400	43	
500	44	44
630	45	
800	46	
1000	45	44
1250	41	
1600	40	
2000	42	42
2500	44	
3150	47	
4000	51	50
5000	54	

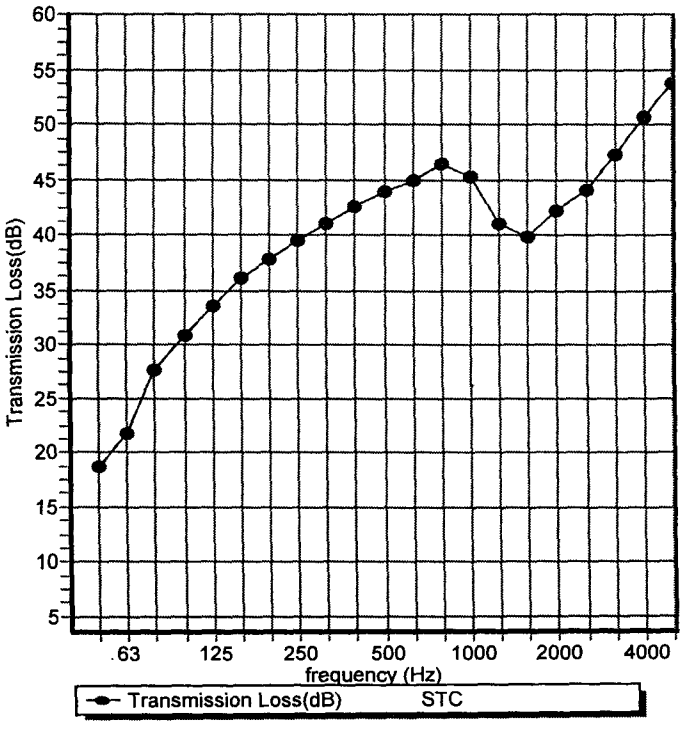


Table 3.1b

Glass Sound Transmission Loss Data*

Saflex Sales Office
24012 Calle de la Plata
Suite 250
Laguna Niguel, CA 92677
714 359 7777
www.saflex.com

Glass Configuration

Insulating

Sound Transmission Loss (dB)

Glass Configuration	Octave band (Hz)	100	125	160	200	250	315	400	500	630	800	1,000	1,250	1,600	2,000	2,500	3,150	4,000	5,000	STC	OITC	R_w
Insulating	1/8" - 1/4" AS** - 1/8" (SEALED) RAL-TL85-212	26	21	23	23	26	21	19	24	27	30	33	36	40	44	46	39	34	45	28	26	30 @ 400 Hz
	1/8" - 3/8" AS** - 1/8" (SEALED) RAL-TL85-[illegible]	26	23	23	20	23	[illegible]	23	27	29	32	[illegible]	[illegible]	39	44	47	48	36	43	[illegible]	[illegible]	32 9 dB @ 315 H
	1/4" - 1/2" AS** - 1/4" (SEALED) RAL-TL85-294	29	22	26	18	25	25	31	32	34	36	39	40	39	35	36	46	52	58	35	28	35
	3/16" - 1" AS** - 3/16" (SEALED) RAL-TL85-215	20	25	18	17	26	28	33	36	38	39	41	44	46	43	38	40	48	51	35	27	37 @ 200 Hz
	1/4" - 1" AS** - 1/4" (UNSEALED) RAL-TL85-293	22	19	27	23	31	30	35	35	36	39	41	42	41	36	37	46	51	56	37	30	37
	3/16" - 4" AS** - 3/16" (UNSEALED) RAL-TL85-216	24	28	30	33	30	38	38	44	46	50	50	50	51	49	41	42	50	52	44	35	44

*The data and information set forth are based on samples tested and are not guaranteed for all samples or applications. Riverbank Acoustical Laboratories.
**Air space.

APPENDIX F

Recommended Products

Printed January 10, 2006

X CLOSE

How to print without a print button To print this page, click on the File menu, then choose Print.

Dap
12 Oz. DAPtex Window & Door Foam

Model 7097818826
Internet Catalog #107003

Innovative latex polymer foam technology seals out drafts, eliminates energy loss and prevents pest infiltration. Will not overexpand and is the best choice for sealing around windows and doors. Proven not to bow, buckle or distort window and door frames. Also ideal for filling, sealing, and insulating cracks and gaps around pipes, foundations, and crawl spaces. Non-clogging applicator and easy soap and water clean up. This toolable and moldable foam may be painted with latex once cured. For exterior and interior use.

- Seals Out Drafts
- Will Not Bow or Buckle Window or Door Frames
- Water Clean-Up
- Toolable and Moldable
- Paintable Once Cured
- Interior/Exterior Use

Price: $4.99

This item can be gift boxed

- Usually arrives in 5 - 7 business days

SPECS

- Internet ID: 107003
- Brand: Dap
- Model #: 7097818826
- Color/Finish: White
- Size: 12
- Application: For Sealing, Filling & Insulating Cracks & Gaps Around Pipes, Vents, Outlets
- Clean-up: Water Clean Up
- Energy Star Compliant: Energy Star
- Exterior: Yes
- Interior: Yes
- Paintable: Yes
- Sealant Type: Latex
- UPC CODE: 070798188266

WARRANTY AND SAFETY

- For warranty information on this product, please call our Internet Customer Service Center at 1-800-430-3376.

OSI®

TECHNICAL DATA

Pro-Series®

SC-175™

ACOUSTICAL SOUND SEALANT, Non-Flammable

PHYSICAL PROPERTIES

Type	Synthetic Latex Rubber
Vehicle	Water
Color	White
Solids by Weight	75%
Flash Point	200°F. TCC (minimum amount of solvent present)
Flammability	Non-Flammable
Toxicity	Toxic only if swallowed. Refer to MSDS.
Tooling/Open Time	15 minutes
Tack Free Time	30 minutes
Cure Time	2-7 days
Application temperature	40°F. minimum
Service Temperature	-5°F. to 170°F.
Freeze-Thaw Stability	Freeze-thaw stable for at least 3 cycles. Unaffected by freezing after curing.
Sag or Slump	Nil (ASTM D2202)
Shore "A" Hardness	45 +/- 5 (Cured 30 days at room temperature)
Elongation	200%
AcceleratedWeathering	No cracks, no discoloration, no chalking: 1000 hrs. in Xenon Arc Weatherometer
Shelf Life	1 year from date of manufacture at 75°F.
Clean Up	Soap and Water

DESCRIPTION

Pro-Series® SC-175™ Acoustical Sound Sealant is a one-part, non-flammable, latex base product designed specially for the reduction of sound transmission in all types of wall partition systems. Its primary function is to achieve and maintain the specific STC (Sound Transmission Class) value of the system designed.

Sealant remains permanently flexible and adheres firmly to wood or metal studs, concrete, gypsum board and most other types of building substrates. Maintains a tough rubber-like seal against air-borne sound, air infiltration and moisture. SC-175™ offers fast, smooth, easy application without difficulty in extrusion. Clean up is also quick and easy with just soap and water.

Field tested and field proven, Pro-Series® SC-175™ is recognized across the country by drywall manufacturers and architects as an effective means of reducing sound transmission.

FEATURES

- UL tested and classified
- Non-flammable formulation
- Easy application and easy clean up
- Will not harden, crack or separate
- Non-staining and non-migrating
- High degree of adhesive and cohesive strength

USES

Pro-Series® SC-175™ was developed primarily for commercial construction utilizing light weight cavity walls and floor systems. The sealant is used for exposed and unexposed applications at perimeter joints, floor and ceiling runners (either wood or metal), cut-outs in gypsum board, veneer plaster systems and other areas where a sound rated assembly is required. The sealant is also applied or buttered around all electrical boxes and outlets, cold air returns, heating and air conditioning ducts, and other utility equipment penetrating wall surfaces for increased acoustical performance. The product is also excellent for perimeter sealing in residential construction around base and sill plates to help reduce air infiltration and unwanted moisture. SC-175™ is used successfully in office buildings, sound studios, hospitals, hotels, motels, schools, apartment complexes and other types of commercial and residential construction where sound ratings are required.

SPECIFICATIONS

UL Classified - 48S9 (R9732). Tested in accordance with and conforms to :

UL 723: U.B.C. Standard No. 42-1 Class I.

ASTM E84: Surface Burning Characteristics of Building Materials.

ASTM E90-85: Laboratory Measurement of Airborne-Sound Transmission Loss of Building Materials.

ASTM D217: Testing Standard for Consistency.

ASTM C919-79: Standard Practice for Use of Sealants in Acoustical Applications.

LIMITATIONS

Do not use below freezing temperature. When temperatures are below 40°F, it is recommended that product be kept at a minimum temperature of 45°F or higher when using.

PACKAGING

29 oz. cartridges - 12/case
Item # 17529

1 gallon pail - 4 pail
Item # 17591

5 gallon pail - 1 pail
Item # 17595

STORAGE

Keep from freezing. Store in cool, dry place at room temperature, preferably at 75°F. +/- 5° for maximum shelf life and performance.

COVERAGE

29 oz. cartridge:
- 3/8" bead - approx. 40 lin. ft.
- 1/4" bead - approx. 89 lin. ft.

5 gallon pail:
- 3/8" bead - approx. 174 lin. ft./gal.
- 1/4" bead - approx. 392 lin. ft./gal.

PERFORMANCE CHARACTERISTICS

1. Underwriters Laboratories Inc. Classified 48S9 (R9732).
   UL 723: Sealant tested for surface burning characteristics.

	Applied to Inorganic Reinforced Cement Board*
Flame Spread	5
Smoke Developed	5

*Tested as applied in two 1/2 in. beads, 8 in. on center. The sealant covered 5.6 percent of the exposed sample area.

2. ASTM E90-85: STC Value - Effect of sealing the opening on a test wall partition.

APPLICATION PROCEDURES

1. All surfaces must be clean, dry and free of dirt, dust, oil, moisture and other foreign substances which could interfere with the bond of the sealant.
2. Cut spout on tube to desired bead size (3/8" round bead recommended) and puncture seal inside spout.
3. Sealant should be applied as specified in the sound-rated system being installed (either wood or metal studs).
   A. Bottom Runners: Apply a continuous 3/8" round bead of sealant at each side of the runners before setting gypsum board. Gypsum board shall be set into sealant to form complete contact with adjacent materials. Repeat procedure for double layer applications.
   B. Top Runners: Apply sealant at top of gypsum board into the joint to provide full contact between the board and the structure above.
   C. Cut-Outs and Perimeter Joints: Backs of electrical boxes, pipes, duct systems and other types of utility equipment penetrating wall surfaces shall be buttered with sealant All joints at perimeter edges including abutting surfaces and corner joints formed by components shall be sealed with sealant.
4. Maximum joint sizes should not exceed 5/8" x 1/2".
5. Clean tools and excess sealant immediately after application with soap and water.
6. If necessary, sealant can be painted as applicable to meet project requirements after 24 hours.

CAUTIONS

CONTAINS ETHYLENE GLYCOL and MINERAL SPIRITS. Do not take internally. If swallowed may cause abdominal discomfort, dizziness or malaise. Use with adequate ventilation.

KEEP OUT OF REACH OF CHILDREN.

FIRST AID

In case of eye contact, flush immediately with plenty of clean water for at least 15 minutes. Consult a physician. If swallowed, give water and induce vomiting. Call physician. If dizziness occurs, remove to fresh air. For skin contact, wash with soap and water.

NOTICE TO PURCHASER

OSI Sealants, Inc. warrants the quality of this product when used according to directions. User shall determine suitability of product for use and assumes all risk. THE FOREGOING WARRANTIES ARE IN LIEU OF ALL OTHER WARRANTIES, EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO THE IMPLIED WARRANTIES OF MERCHANTABILITY OR FITNESS FOR ANY PURPOSE NOT EXPRESSLY SET FORTH HEREIN. If not satisfied with the product's performance when used as directed, return sales receipt and used container to OSI Sealants, Inc., 7405 Production Drive, Mentor, Ohio 44060 for product replacement. The seller will not accept liability for more than product replacement.

FOR COMMERCIAL USE CONTACT OSI SEALANTS TECHNICAL DEPARTMENT OR VISIT OUR WEB SITE AT *www.osisealants.com.*

Test partition consisted of metal studs 24" O.C. with double layer gypsum board, Firecode "C" and attached with screws on both sides. Inside of partition was filled with sound insulation. Partition system was erected and shimmed out 4.75 mm (0.1875 in.) at top, bottom and edges.

Results: Sound Transmission Class Value.

1. Un-sealed partition - Arrows show sound travel around or through partitions.

STC=15

2. Single bead of sealant used at top and bottom runners only - both sides of partition system.
STC=24

Metal Stud Partition — Door/window frame in a hollow partition

3. Single bead of sealant used at top, bottom and perimeter joints - both sides of system.

STC=45

4. Double bead of sealant used at top, bottom and all perimeter edges. Both sides of partition system.
STC=55

OSI Sealants, Inc.
7405 Production Drive
Mentor, OH 44060
U.S.A.

Phone: (800) 624-7767
(440) 255-8900
Fax: (440) 974-8358

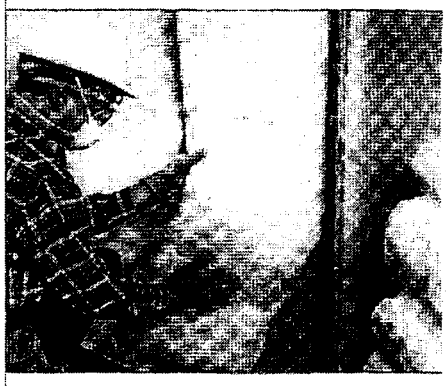
s011175

Johns Manville

Smart Ideas. Better Insulation.

Unfaced

Formaldehyde-free Thermal and Acoustical Fiber Glass Insulation



FORMALDEHYDE-FREE

Johns Manville has revolutionized the building insulation industry by introducing an entire line of formaldehyde-free fiber glass building insulation. JM Formaldehyde-free insulation provides the same high-quality thermal and acoustical properties as conventional JM fiber glass – just without the formaldehyde-based binder. Why? Because it's a smart thing to do for our customers and the environment. Formaldehyde has traditionally been used as part of the binder in fiber glass insulation. Although there is no health risk with the traditional product, formaldehyde at higher levels may cause irritation and sensitivity. JM Formaldehyde-free building insulation utilizes an innovative new acrylic binder that eliminates binder-related formaldehyde emissions during manufacturing and, once installed, will not off-gas formaldehyde in the indoor environment. No formaldehyde means fewer things to worry about. Visit us at **www.jm.com** for more information.

PRODUCT DESCRIPTION

Johns Manville unfaced insulation is a lightweight thermal and acoustical fiber glass insulation made of long, resilient glass fibers bonded with an acrylic thermosetting binder. Where vapor control is required, a separate vapor retarder can be used.

AVAILABLE FORMS

- Pre-cut batts – fit standard wall cavities and are faster to install than roll products.
- Rolls – can be cut to fit any size wall cavity and installed in any part of a building – especially long unobstructed areas such as attics or crawl spaces.

APPLICATIONS

New Construction

- Wood frame construction – residential homes and light commercial buildings
- Metal frame construction – commercial buildings
- Manufactured homes – modular or manufactured housing
- Engineered wood construction – assemblies framed with 12" to 19.2" on-center cavities, wide-spaced wood trusses or I-joists
- Suspended ceiling systems – sized to fit above 2 x 4 ceiling panels
- Interior wall sound control – interior walls and floor and ceiling assemblies (For sound class ratings for wall assemblies, see the appropriate STC values datasheet for either steel or wood framing.)
- Basement wall insulation

Retrofit

- Re-insulating attics, crawl spaces
- Back-fill above suspended ceiling systems

INSTALLATION

Available in many sizes and R-values, unfaced insulation can be quickly installed for a wide variety of applications. JM unfaced insulation cuts easily with an ordinary utility knife and installs by simply pressing in place between studs or joists. Wire rods, chicken wire or wire may be needed to hold insulation in place in horizontal applications. Unfaced insulation must be protected from the outside elements like wind, rain and sunlight.

Note: In colder climate areas, vapor retarders (whether attached to the insulation or applied separately) are often placed toward the heated or conditioned side of the wall. This is done to reduce water vapor penetration into the wall from the building interior. Conversely, in predominantly hot, humid climates local practices often call for placing the vapor retarder toward the outside of the wall cavity. Check your local building codes for vapor retarder requirements.

PACKAGING

Johns Manville unfaced insulation is compression-packaged for savings in storage and freight costs.

RECOMMENDED STORAGE AND TRANSPORT

Store insulation indoors. Keep insulation clean and dry at all times. When transporting, cover completely with a waterproof tarpaulin as necessary.

SPECIFICATION COMPLIANCE

ASTM C 665, Type I
ASTM E 84 Flame Spread 25 or less, Smoke Developed 50 or less

PERFORMANCE ADVANTAGES

- Formaldehyde-free – will not off-gas formaldehyde in the indoor environment.
- Thermal Efficiency – provides effective resistance to heat transfer with R-values up to R-38 (RSI-6.7).
- Sound Control – reduces transmission of sound through exterior and interior walls and floor/ceiling assemblies.
- Fire-resistant and Noncombustible – (see Specification Compliance).
- Noncorrosive – does not accelerate corrosion of pipes, wiring or metal studs.
- Durable – unaffected by moisture, oil, grease and most acids. It will not rot, mildew or otherwise deteriorate.
- Resilient – bonded glass fibers will not pull apart during normal applications and resist settling, breakdown and sagging from vibration.
- Flexible – forms readily around corners and curved surfaces.

Unfaced

Formaldehyde-free Thermal and Acoustical Fiber Glass Insulation

Visit our website at www.jm.com
Or call: 1-800-654-3103

BUILDING CODE COMPLIANCE AND FIRE HAZARD CLASSIFICATION

	ICBO	SBCCI	BOCA	IBC/IRC	Flame Spread*	Smoke Developed*
Unfaced	All Types	All Types	All Types	All Types/All Types	25	50

*Per ASTM E 84.

AVAILABLE FORMS*

Specification Compliance	R-value (hr.ft².°F/Btu)	RSI-value (m².°K/Watts)	Thickness** (in)	Thickness** (mm)	Width*** Metal Framing (in)	Width*** Wood Framing (in)	Width*** Metal Framing (mm)	Width*** Wood Framing (mm)
ASTM C 665	38c	6.7	10¼	260		15½, 23¼		393, 600
Unfaced	38	6.7	13	318	16, 24	16, 24	406, 610	406, 610
Type I	30c	5.3	8¼	204		15½, 23¼		393, 600
	30	5.3	10¼	260	16, 24	16, 19, 24	406, 610	406, 482, 610
	25	4.4	8½	210	16, 24	15, 19, 23	406, 610	381, 482, 584
	22	3.3	7½	165		15		381
	21	3.7	5½	140		15, 23		381, 584
	19	3.3	6¼	159	16, 24	15, 19, 23	406, 610	381, 482, 584
	15	2.6	3½	89		11, 15, 23		279, 381, 584
	13	2.3	3¼, 3½	89, 92	16, 24	15, 23	406, 610	381, 584
	11	1.9	3¼, 3½	89, 92	16, 24	15, 19, 23	406, 610	381, 482, 584
	N/A^	N/A	2¾	70	16, 24		406, 610	

* Consult your local sales representative or product availability chart for other available sizes and R-values (RSI-values) including wide-roll products.
** Thickness may vary by producing location.
*** Special widths and lengths may be available. Check with your local sales representative. Standard product lengths include 48, 93 and 96 inch bats.
^ For sound control applications in interior walls.

SHORT FORM SPECIFICATION

All insulation shown on drawings or specified herein shall be "Johns Manville Unfaced Formaldehyde-free Thermal and Acoustical Fiber Glass Insulation." Thermal resistance "R" (RSI) values of the insulation shall be R (RSI) _____ in ceilings, R (RSI) _____ in walls, and R (RSI) _____ in floors over unheated spaces. The product shall have an FHC rating of 25/50 or less.

LIMITATIONS OF USE

Check applicable building codes. Unfaced insulation should not be left exposed.

CERTIFIED
MINIMUM 25% RECYCLED CONTENT
• At least 20% post-consumer glass and the balance post-industrial glass (North American plant-wide average).
SCIENTIFIC CERTIFICATION SYSTEMS 1-800-ECO-FACTS

Properly insulating a structure using Johns Manville building insulation helps preserve our environment by reducing energy consumption for heating and cooling, reducing the pollution resulting from fuel burning, reducing the emission of hazardous air pollutants during manufacturing and reducing waste through the utilization of recycled materials. Look for the cross and globe emblem on Johns Manville building insulation which indicates independent certification by Scientific Certification Systems, Inc. of 25% or more recycled glass content.

Technical specifications as shown in this literature are intended to be used as general guidelines only. The physical and chemical properties of unfaced thermal and acoustical fiber glass insulation listed herein represent typical, average values obtained in accordance with accepted test methods and are subject to normal manufacturing variations. They are supplied as a technical service and are subject to change without notice. Any references to numerical flame spread or smoke developed ratings are not intended to reflect hazards presented by these or any other materials under actual fire conditions. Check with the sales office nearest you for current information. All Johns Manville products are sold subject to Johns Manville's Limited Warranty and Limitation of Remedy. For a copy of the Johns Manville Limited Warranty and Limitation of Remedy or for information on other Johns Manville thermal and acoustical insulation and systems, call or write to the 800 number or address listed below.

JM
Johns Manville

Distributed by:

Building Insulation Division
717 17th Street (80202)
P.O. Box 5108
Denver, CO 80217-5108
1-800-654-3103
www.jm.com

BID-0008 8/02

APPENDIX G

Relevant Noise Regulations

GARY L. PRYOR
DIRECTOR

County of San Diego

DEPARTMENT OF PLANNING AND LAND USE

5201 RUFFIN ROAD, SUITE B, SAN DIEGO, CALIFORNIA 92123-1666
INFORMATION (858) 694-2960
TOLL FREE (800) 411-0017

SAN MARCOS OFFICE
151 E. CARMEL ST.
SAN MARCOS, CA 92078-4309
(760) 471-0730

EL CAJON OFFICE
200 EAST MAIN ST. • SIXTH FLOOR
EL CAJON, CA 92020-3912
(619) 441-4030

April 11, 2007

Rick Clark
Schuss Clark Inc.
9474 Kearny Villa Road Suite 103
San Diego, CA 92124

RE: Kenwood Apartments, S06-032 FIRST ITERATION REVIEW OF INITIAL STUDIES/INFORMATION

The Department of Planning and Land Use (DPLU) has completed the review of your Extended Initial Study/Information and determined it to be "incomplete" as defined by the California Environmental Quality Act (CEQA). At this time, additional information or revisions will be required to determine your project's potential impacts on the environment and complete the CEQA Environmental Initial Study. The reasons for this determination and the revisions/information required are as follows:

REVISIONS AND ADDITIONAL INFORMATION:

Name of Study

A. PRELIMINARY GRADING PLAN

DRAFT PRELIMINARY COMMENTS, PRELIMINARY GRADING PLAN RECEIVED 1-11-07 BY DPLU, STP 06-032RPL

DPW has reviewed the above subject document and has accepted same.

B. DRAINAGE STUDY

DRAFT COMMENTS FOR DRAINAGE STUDY RECEIVED 1-11-07 BY DPLU, STP 06-032RPL

DPW has reviewed the above subject document and has accepted same for ceqa purposes.

C. STORMWATER MANAGEMENT PLAN

DRAFT COMMENTS, STORMWATER MANAGEMENT PLAN RECEIVED 1-11-07 BY DPLU, STP06-032RPL

DPW has reviewed the above subject document and has the following comments:

The project exceeds 5000 sq. ft. (1260 sq. ft. for Kenwood Drive road pavement and 4230 sq. ft. for on-site pavement) of new pavement. Therefore a Major SWMP is required.

1. Visit http://www.sdcounty.ca.gov/dpw/watersheds/land_dev/susmp.html and then see appendix C: Complete the checklist and attachments listed in the foregoing appendix C: This will fulfill the requirements for the format of a Major SWMP. Insure that site design, source control, and treatment BMP's are appropriately addressed. Visit: http://www.sdcounty.ca.gov/dpw/watersheds/land_dev/susmp.html and then see SUSMP Manual. Identify which category (i.e. first, second, third,etc.) and provide "Mechanisms to assure maintenance" and "Funding."

A Major SWMP needs to be signed, dated, and stamped by a registered civil engineer with a current expiration date.

D. PLANNING COMMENTS

The applicant needs to indicate that they agree to pay the TIF fee for cumulative impacts in lieu of a cumulative traffic study. Or, submit a cumulative traffic study.

Landscaping. The following corrections should be made on the plans submitted. Requested corrections should be highlighted by indicating on what sheets the modifications took place. Any items that are not corrected must have an explanation as to why the changes were not made.

Requirements are based on the *County of San Diego's Landscape Water Conservation Design Manual, the Off Street Parking Design Manual, and the Spring Valley (Bancroft District) Design Guidelines.*

1. Required street trees along Kenwood Dr. shall be located as close to the property line as possible, outside of the right-of-way. Trees may be located closer to the building (as is currently shown) for shade relief, aesthetics, etc. but will not be counted as 'street' trees. Per the SV Design Guidelines, one tree shall be planted for every 300 square feet of area within the required landscape zone. Trees shall be selected from the plant palette for the Bancroft District (pages 23-24). Trees shown on the plan in the front yard will not meet these requirements (wrong location, wrong species). Please review and revise.

2. In lieu of providing upwards of 16 trees on the western property line (as required by the SV Design Guidelines for side yard and rear yard tree planting), please provide one tree 20' on center in tree pockets from the face of the building back towards the existing power pole. Trees shall be selected from the same plant palette as the street trees, and shall be a species capable of growing under the over head electrical lines without continuous pruning. Add one additional tree along the eastern property line adjacent to the small patch of turf proposed for the children's playground.

3. Provide a table on the plans that indicates how much area (square footage) is devoted to landscaping, and of that number, what percentage of turf is proposed. Per the Landscape Water Conservation Design Manual, no more than 15% of the total landscaped area can be planted in cool season turf. If a playground structure is proposed for the children's play area, then consider using a different surface treatment other than turf to help reduce the amount of turf to 15% or lower. Also look at reducing the amount of turf within the front yard landscape zone to minimize the need for supplemental irrigation.

4. Provide a note on the plans that indicates who will be responsible for on-going maintenance of common areas and right-of-way plantings.

Planning is anticipating comments from DPW Wastewater Division, for the sewerage aspects. Comments will be forwarded upon receipt.

Planning has yet to receive comments from the Spring Valley Community Planning Group and the Spring Valley Design Review Board. Comments will be forwarded upon receipt.

E. NOISE STUDY

Staff has completed the review of the Kenwood Apartment Project and the Acoustical Analysis report by Eilar Associates received on January 11, 2007. The project consists of an 11,520 square foot building with eight rental apartments, private patios and a common use area. Staff recommends minor edits and additional information to the Acoustical Analysis Report.

Staff has the following comments for Acoustical Analysis Report Prepared by Eilar Associates.

1. Identify and discuss any proposed noise generating equipment (such as but not limited to: HVAC units, pumps, etc). Please determine whether proposed project is in conformance with the sound level limits within the County Noise Ordinance.

2. Please identify the 6 foot high wood or vinyl property perimeter wall on Figure 9. The proposed 6 foot high wall is utilized in the noise assessment and is considered as a design consideration, discussed in Section 5.1 Exterior.

Prior to obtaining a building permit, the applicant shall:

1. On the plans, identify the 3 foot high patio wall as a "noise control element" These patio exterior walls are incorporated into the plans and are considered a project design consideration.

2. On the plans, identify the 6 foot high wood or vinyl property perimeter wall as a "noise control element". This perimeter wall is incorporated into the plans and is considered a project design consideration.

3. Provide an interior noise analysis for Units 1 and 2. The acoustical report submitted by Eilar Associates indicates that an acoustical interior analysis is required for building facades exceeding 60 CNEL. Acoustical report identifies Units 1 and 2 exposed to noise impacts above 60 CNEL. Therefore, Units 1 and 2 are subject to an interior noise analysis, which will determine if unmitigated future interior noise levels in habitable residential space will achieve noise levels below 45 CNEL.

If you have any specific questions regarding these comments, please contact Tim Taylor at (858) 694-3706 or by e-mail at tim.taylor@sdcounty.ca.gov.

PROJECT SCHEDULE: An updated copy of your project schedule is attached showing an estimated hearing/decision date of December 27, 2007.

SUBMITTAL REQUIREMENTS: Unless other agreements have been made with County staff, you must comply with the following submittal requirements in order to make adequate progress and to minimize the time and cost in the processing of your application:

Section 36.404

SECTION 36.404 SOUND LEVEL LIMITS

Unless a variance has been applied for and granted pursuant to this chapter, it shall be unlawful for any person to cause or allow the creation of any noise to the extent that the one-hour average sound level, at any point on or beyond the boundaries of the property on which the sound is produced, exceeds the applicable limits set forth below except that construction noise level limits shall be governed by Section 36.410.

ZONE	TIME	APPLICABLE LIMIT ONE-HOUR AVERAGE SOUND LEVEL (DECIBELS)
R-S, R-D, R-R, R-MH, A-70, A-72, S-80, S-81, S-87, S-88, S-90, S-92, R-V, AND R-U. Use regulations with a density of less than 11 dwelling unit per acre.	7 a.m. to 10 p.m. 10 p.m. to 7 a.m.	50 45
R-RO, R-C, R-M, C-30, S-86, R-V AND R-U Use regulations with a density of 11 or more dwelling units per acre.	7 a.m. to 10 p.m. 10 p.m. to 7 a.m.	55 50
S-94 and all other commercial zones	7 a.m. to 10 p.m. 10 p.m. to 7 a.m.	60 55
M-50, M-52, M-54	Anytime	70
S-82, M-58, and all other industrial zones	Anytime	75

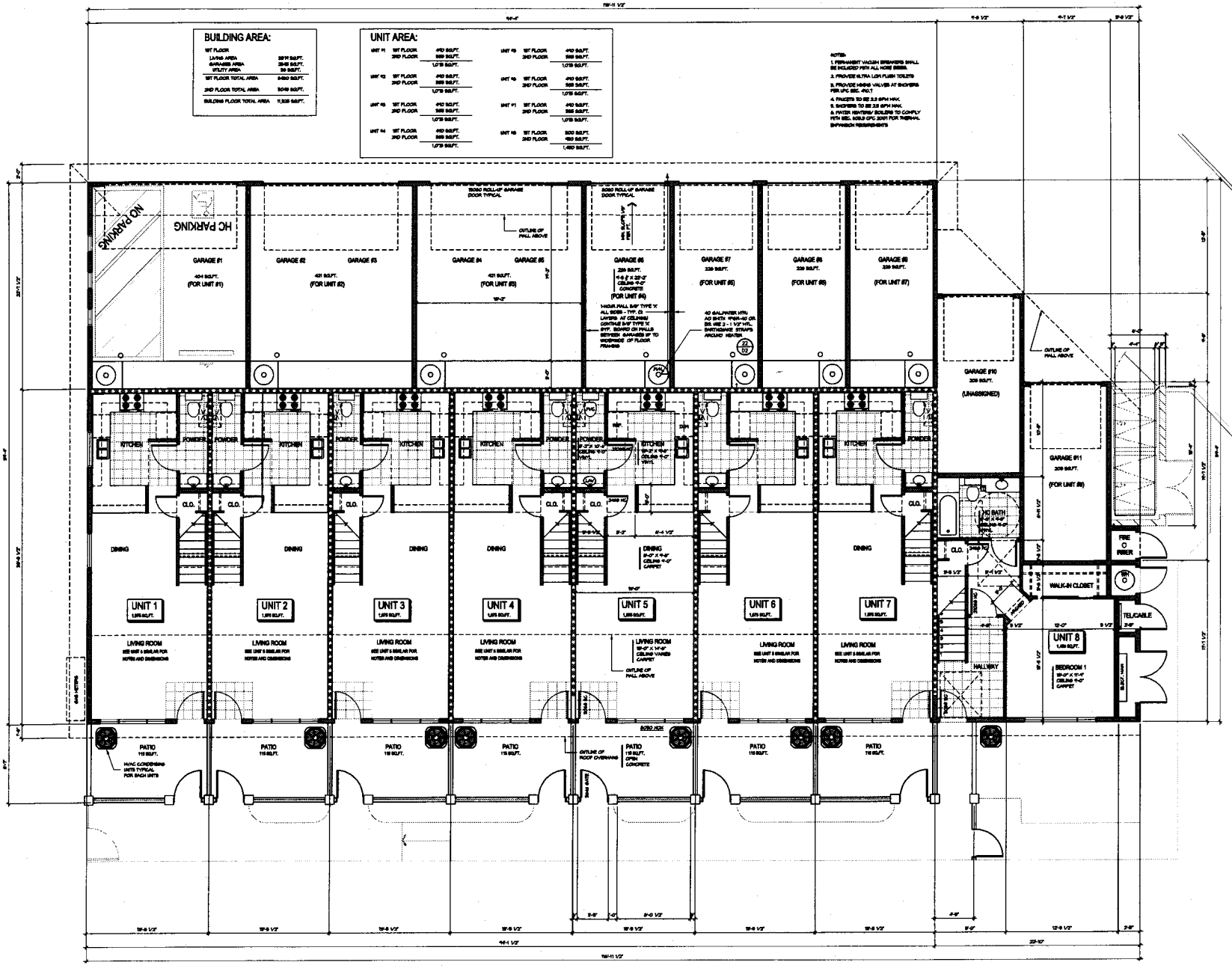
If the measured ambient level exceeds the applicable limit noted above, the allowable one-hour average sound level shall be the ambient noise level. The ambient noise level shall be measured when the alleged noise violation source is not operating.

The sound level limit at a location on a boundary between two (2) zoning districts is the arithmetic mean of the respective limits for the two districts provided however, that the one-hour average sound level limit applicable to extractive industries including but not limited to borrow pits and mines, shall be 75 decibels at the property line regardless of the zone where the extractive industry is actually located.

Fixed-location public utility distribution or transmission facilities located on or adjacent to a property line shall be subject to the noise level limits of this section, measured at or beyond six (6) feet from the boundary of the easement upon which the equipment is located. (Amended by Ord. No. 7094 (N.S.) Effective 3-25-86.)

APPENDIX H

Mechanical Equipment Noise Data



LOWER LEVEL FLOOR PLAN

SCALE: 1/8" = 1'-0"

SCHUSS · CLARK
AN ARCHITECTURAL CORPORATION
TONY ARCANGELI
18465 SANTIAGO BOULEVARD, SUITE 206
VILLA PARK, CA 92861
(949) 645-9975

KENWOOD APARTMENTS
9250 KENWOOD DRIVE
SPRING VALLEY, CA 91977

Revisions
SITE PLAN REVIEW
10-23-06

Sheet Content
LOWER LEVEL FLOOR PLAN

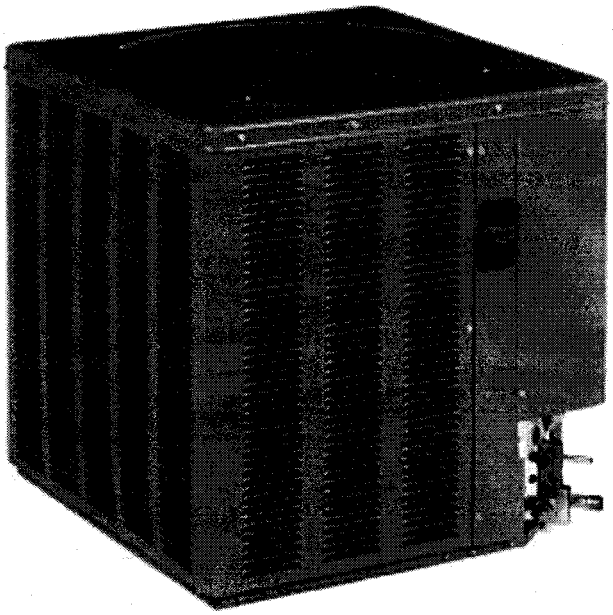
Document Status
Date: 10-23-06
Drawn by: MC,EG
Checked by: RC
Project: 06-081.06

Sheet Number
A1

FORM NO. A22-182 REV. 6
Supersedes Form No. A22-182 Rev. 5

RUUD

13 SEER CONDENSING UNITS



Full Metal Jacket

13AJA SERIES

Features

- Painted louvered steel cabinet.
- Easily accessible control box.
- Condenser coils constructed with copper tubing and enhanced aluminum fins.
- Grille/Motor mount for quiet fan operation.

Applications

Outdoor condensing unit designed for ground level or rooftop installations. These units offer comfort and dependability for single, multi-family and light commercial applications.

Accessories

- Low Pressure Control (RXAC-A03)
- High Pressure Control (RXAB-A03)
- Low Ambient Control (RXAD-A04)
- Compressor Time Delay Control
- Crankcase Heater
- Sound Enclosure
- Filter Drier

ISO 9001:2000
Certificate Number: 30064

c UL us LISTED

ARI Standard 210/240 UAC

ENERGUIDE
Seasonal Energy Efficiency Ratio (SEER)
13.0 — Uses least energy → 21.0

Model Number Identification

13	A	J	A	18	A	01
13 SEER	A = AIR CONDITIONER	VOLTAGE J = 208-230 SINGLE PHASE	DESIGN SERIES A = 1ST DESIGN	NOMINAL COOLING CAPACITY 18 = 18,000 BTU/HR [5.28 kW] 24 = 24,000 BTU/HR [7.03 kW] 30 = 30,000 BTU/HR [8.79 kW] 36 = 36,000 BTU/HR [10.55 kW] 42 = 42,000 BTU/HR [12.31 kW] 48 = 48,000 BTU/HR [14.07 kW] 60 = 60,000 BTU/HR [17.58 kW]	CABINET A = FULL METAL JACKET	RUUD VALUE SERIES

Performance Data @ ARI Standard Conditions—Cooling

Model Numbers		80°F [26.5°C] DB/67°F [19.5°C] WB Indoor Air 95°F [35°C] DB Outdoor Air					Sound Rating dB	Indoor CFM [L/s]
Outdoor Unit 13AJA	Indoor Coil and/or Air Handler	Total Capacity BTU/H [kW]	Net Sensible BTU/H [kW]	Net Latent BTU/H [kW]	EER	SEER		
18	RCFA-H*2417A* ①	18,300 [5.4]	13,000 [3.8]	5,300 [1.6]	11.70	13.00	76	600 [283]
	RCFA-A*2414A*	18,300 [5.4]	13,000 [3.8]	5,300 [1.6]	11.70	13.00	76	600 [283]
	RCFA-A*2417A*	18,300 [5.4]	13,000 [3.8]	5,300 [1.6]	11.70	13.00	76	600 [283]
	RCFA-H*2414A*	18,300 [5.4]	13,000 [3.8]	5,300 [1.6]	11.70	13.00	76	600 [283]
	17AHBA24HM (RCHJ-24A1)	17,900 [5.2]	11,450 [3.4]	6,450 [1.9]	12.60	13.00	76	600 [283]
	UBHK-17 (RCHJ-24A1)	18,000 [5.3]	12,500 [3.7]	5,500 [1.6]	12.95	13.00	76	600 [283]
	RCQC-2417A	18,400 [5.4]	13,300 [3.9]	5,100 [1.5]	11.70	13.10	76	600 [283]
	17AHSA18AU (RCSA-A*2417A*)	18,500 [5.4]	13,150 [3.9]	5,350 [1.6]	12.20	13.00	76	600 [283]
	17AHLA24HM (RCSA-H*2417A*)	18,800 [5.5]	13,350 [3.9]	5,450 [1.6]	13.10	14.00	76	600 [283]
	17AHSA18HM (RCSA-H*2417A*)	18,500 [5.4]	13,150 [3.9]	5,350 [1.6]	12.20	13.00	76	600 [283]
	UHLA-HM2417 (RCSA-H*2417A*)	18,800 [5.5]	13,350 [3.9]	5,450 [1.6]	13.10	14.00	76	600 [283]
	UHSA-HM1817 (RCSA-H*2417A*)	18,500 [5.4]	13,150 [3.9]	5,350 [1.6]	12.20	13.00	76	600 [283]
24	RCFA-H*2417A* ①	23,400 [6.9]	16,350 [4.8]	7,050 [2.1]	11.55	13.00	74	800 [378]
	RCFA-A*2414A*	23,400 [6.9]	16,350 [4.8]	7,050 [2.1]	11.55	13.00	74	800 [378]
	RCFA-A*2417A*	23,400 [6.9]	16,350 [4.8]	7,050 [2.1]	11.55	13.00	74	800 [378]
	RCFA-H*2414A*	23,400 [6.9]	16,350 [4.8]	7,050 [2.1]	11.55	13.00	74	800 [378]
	17AHBA24HM (RCHJ-24A1)	22,800 [6.7]	15,600 [4.6]	7,200 [2.1]	12.05	13.00	74	800 [378]
	UBHK-17 (RCHJ-24A1)	23,000 [6.7]	15,750 [4.6]	7,250 [2.1]	12.60	13.00	74	800 [378]
	UBHK-17 (RCHJ-24A2)	23,000 [6.7]	15,750 [4.6]	7,250 [2.1]	12.60	13.00	74	800 [378]
	17AHSA24AU (RCSA-A*2417A*)	23,600 [6.9]	16,450 [4.8]	7,150 [2.1]	11.85	13.00	74	800 [378]
	17AHLA24HM (RCSA-H*2417A*)	24,000 [7.0]	16,800 [4.9]	7,200 [2.1]	13.10	14.00	74	775 [366]
	17AHSA24HM (RCSA-H*2417A*)	23,600 [6.9]	16,450 [4.8]	7,150 [2.1]	11.85	13.00	74	800 [378]
	UHLA-HM2417 (RCSA-H*2417A*)	24,000 [7.0]	16,800 [4.9]	7,200 [2.1]	13.10	14.00	74	775 [366]
	UHSA-HM2417 (RCSA-H*2417A*)	23,600 [6.9]	16,450 [4.8]	7,150 [2.1]	11.85	13.00	74	800 [378]
30	RCFA-H*3617A* ①	28,600 [8.4]	20,100 [5.9]	8,500 [2.5]	11.50	13.00	73	1,000 [472]
	RCFA-A*3617A*	28,600 [8.4]	20,100 [5.9]	8,500 [2.5]	11.50	13.00	73	1,000 [472]
	RCFA-A*3621A*	28,600 [8.4]	20,100 [5.9]	8,500 [2.5]	11.50	13.00	73	1,000 [472]
	RCFA-H*3621A*	28,600 [8.4]	20,100 [5.9]	8,500 [2.5]	11.50	13.00	73	1,000 [472]
	21AHBA36HM (RCHJ-36A1)	28,800 [8.4]	19,700 [5.8]	9,100 [2.7]	12.65	14.00	73	1,000 [472]
	UBHK-21 (RCHJ-36A1)	28,800 [8.4]	20,050 [5.9]	8,750 [2.6]	12.90	13.00	73	1,000 [472]
	RCQC-3617A	29,000 [8.5]	20,600 [6.0]	8,400 [2.5]	11.60	13.00	73	1,000 [472]
	RCQC-3621A	29,000 [8.5]	20,600 [6.0]	8,400 [2.5]	11.60	13.00	73	1,000 [472]
	17AHSA30AU (RCSA-A*3617A*)	28,600 [8.4]	20,100 [5.9]	8,500 [2.5]	11.90	13.00	73	950 [448]
	17AHLA36HM (RCSA-H*3617A*)	29,200 [8.6]	20,550 [6.0]	8,650 [2.5]	12.70	14.00	73	1,000 [472]
	17AHSA30HM (RCSA-H*3617A*)	28,600 [8.4]	20,100 [5.9]	8,500 [2.5]	11.90	13.00	73	950 [448]
	UHLA-HM3617 (RCSA-H*3617A*)	29,200 [8.6]	20,550 [6.0]	8,650 [2.5]	12.70	14.00	73	1,000 [472]
	UHSA-HM3017 (RCSA-H*3617A*)	28,600 [8.4]	20,100 [5.9]	8,500 [2.5]	11.90	13.00	73	950 [448]
	TCQC-3617A	29,000 [8.5]	20,600 [6.0]	8,400 [2.5]	11.60	13.00	73	1,000 [472]
	TCQC-3621A	29,000 [8.5]	20,600 [6.0]	8,400 [2.5]	11.60	13.00	73	1,000 [472]

① Highest sales volume tested combination required by D.O.E. test procedures.

[ ] Designates Metric Conversions

Performance Data @ ARI Standard Conditions—Cooling (con't.)

Model Numbers		80°F [26.5°C] DB/67°F [19.5°C] WB Indoor Air 95°F [35°C] DB Outdoor Air					Sound Rating dB	Indoor CFM [L/s]
Outdoor Unit 13AJA	Indoor Coil and/or Air Handler	Total Capacity BTU/H [kW]	Net Sensible BTU/H [kW]	Net Latent BTU/H [kW]	EER	SEER		
36	RCFA-H*3617A* ①	34,400 [10.1]	25,100 [7.4]	9,300 [2.7]	11.75	13.00	76	1,175 [554]
	RCFA-A*3617A*	34,400 [10.1]	25,100 [7.4]	9,300 [2.7]	11.75	13.00	76	1,175 [554]
	RCFA-A*3621A*	34,400 [10.1]	25,100 [7.4]	9,300 [2.7]	11.75	13.00	76	1,175 [554]
	RCFA-H*3621A*	34,400 [10.1]	25,100 [7.4]	9,300 [2.7]	11.75	13.00	76	1,175 [554]
	RCHJ-36A1	33,200 [9.7]	23,570 [6.9]	9,630 [2.8]	11.25	13.00	76	1,200 [566]
	21AHBA36HM (RCHJ-36A1)	35,200 [10.3]	24,200 [7.1]	11,000 [3.2]	12.65	14.00	76	1,300 [613]
	UBHK-21 (RCHJ-36A1)	34,800 [10.2]	24,000 [7.0]	10,800 [3.2]	12.70	13.00	76	1,200 [566]
	RCHJ-36A2	33,200 [9.7]	23,570 [6.9]	9,630 [2.8]	11.25	13.00	76	1,200 [566]
	UBHK-21 (RCHJ-36A2)	34,800 [10.2]	24,000 [7.0]	10,800 [3.2]	12.70	13.00	76	1,200 [566]
	RCQC-3617A	35,000 [10.3]	25,100 [7.4]	9,900 [2.9]	11.75	13.00	76	1,200 [566]
	RCQC-3621A	35,000 [10.3]	25,100 [7.4]	9,900 [2.9]	11.75	13.00	76	1,200 [566]
	17AHSA36AU (RCSA-A*3617A*)	34,600 [10.1]	25,300 [7.4]	9,300 [2.7]	12.00	13.00	76	1,100 [519]
	17AHLA36HM (RCSA-H*3617A*)	35,400 [10.4]	25,800 [7.6]	9,600 [2.8]	12.70	14.00	76	1,200 [566]
	17AHSA36HM (RCSA-H*3617A*)	34,600 [10.1]	25,300 [7.4]	9,300 [2.7]	12.00	13.00	76	1,100 [519]
	UHLA-HM3617 (RCSA-H*3617A*)	35,400 [10.4]	25,800 [7.6]	9,600 [2.8]	12.70	14.00	76	1,200 [566]
	UHSA-HM3617 (RCSA-H*3617A*)	34,600 [10.1]	25,300 [7.4]	9,300 [2.7]	12.00	13.00	76	1,100 [519]
	UHSA-HM3621 (RCSA-H*3621A*)	34,600 [10.1]	25,300 [7.4]	9,300 [2.7]	12.00	13.00	76	1,100 [519]
	TCQC-3617A	35,000 [10.3]	25,100 [7.4]	9,900 [2.9]	11.75	13.00	76	1,200 [566]
	TCQC-3621A	35,000 [10.3]	25,100 [7.4]	9,900 [2.9]	11.75	13.00	76	1,200 [566]
42	RCFA-H*4821A* ①	40,500 [11.9]	29,000 [8.5]	11,500 [3.4]	11.15	13.00	76	1,400 [661]
	RCFA-A*4821A*	40,500 [11.9]	29,000 [8.5]	11,500 [3.4]	11.15	13.00	76	1,400 [661]
	RCFA-A*4824A*	40,500 [11.9]	29,000 [8.5]	11,500 [3.4]	11.15	13.00	76	1,400 [661]
	RCFA-H*4824A*	40,500 [11.9]	29,000 [8.5]	11,500 [3.4]	11.15	13.00	76	1,400 [661]
	24AHBA48HM (RCHJ-48A1)	41,000 [12.0]	28,000 [8.2]	13,000 [3.8]	12.10	14.00	76	1,500 [708]
	UBHK-24 (RCHJ-48A1)	40,500 [11.9]	27,800 [8.1]	12,700 [3.7]	12.00	14.00	76	1,400 [661]
	RCQC-4821A	41,000 [12.0]	29,100 [8.5]	11,900 [3.5]	11.10	13.00	76	1,400 [661]
	RCQC-4824A	41,000 [12.0]	29,100 [8.5]	11,900 [3.5]	11.10	13.00	76	1,400 [661]
	21AHSA42AU (RCSA-A*4821A*)	40,500 [11.9]	28,800 [8.4]	11,700 [3.4]	11.35	13.00	76	1,325 [625]
	21AHLA48HM (RCSA-H*4821A*)	41,500 [12.2]	29,500 [8.6]	12,000 [3.5]	12.20	14.00	76	1,400 [661]
	21AHSA42HM (RCSA-H*4821A*)	40,500 [11.9]	28,800 [8.4]	11,700 [3.4]	11.35	13.00	76	1,325 [625]
	UHLA-HM4821 (RCSA-H*4821A*)	41,500 [12.2]	29,500 [8.6]	12,000 [3.5]	12.20	14.00	76	1,400 [661]
	UHSA-HM4221 (RCSA-H*4821A*)	40,500 [11.9]	28,800 [8.4]	11,700 [3.4]	11.35	13.00	76	1,325 [625]
	TCQC-4821A	41,000 [12.0]	29,100 [8.5]	11,900 [3.5]	11.10	13.00	76	1,400 [661]
	TCQC-4824A	41,000 [12.0]	29,100 [8.5]	11,900 [3.5]	11.10	13.00	76	1,400 [661]
48	RCFA-H*4821A* ①	46,000 [13.5]	33,300 [9.8]	12,700 [3.7]	11.65	13.00	77	1,575 [743]
	RCFA-A*4821A*	46,000 [13.5]	33,300 [9.8]	12,700 [3.7]	11.65	13.00	77	1,575 [743]
	RCFA-A*4824A*	46,000 [13.5]	33,300 [9.8]	12,700 [3.7]	11.65	13.00	77	1,575 [743]
	RCFA-H*4824A*	46,000 [13.5]	33,300 [9.8]	12,700 [3.7]	11.65	13.00	77	1,575 [743]
	24AHBA48HM (RCHJ-48A1)	45,000 [13.2]	31,800 [9.3]	13,200 [3.9]	11.75	13.00	77	1,685 [795]
	UBHK-24 (RCHJ-48A1)	45,000 [13.2]	31,600 [9.3]	13,400 [3.9]	11.90	13.00	77	1,600 [755]
	UBHK-24 (RCHJ-48A2)	45,000 [13.2]	31,600 [9.3]	13,400 [3.9]	11.90	13.00	77	1,600 [755]
	RCQC-4821A	45,500 [13.3]	33,500 [9.8]	12,000 [3.5]	11.30	13.00	77	1,600 [755]
	RCQC-4824A	45,500 [13.3]	33,500 [9.8]	12,000 [3.5]	11.30	13.00	77	1,600 [755]
	21AHSA48AU (RCSA-A*4821A*)	45,500 [13.3]	33,000 [9.7]	12,500 [3.7]	11.70	13.00	77	1,500 [708]
	24AHSA48AU (RCSA-A*4824A*)	45,500 [13.3]	33,000 [9.7]	12,500 [3.7]	11.70	13.00	77	1,500 [708]
	21AHLA48HM (RCSA-H*4821A*)	46,500 [13.6]	33,600 [9.8]	12,900 [3.8]	12.30	13.50	77	1,575 [743]
	21AHSA48HM (RCSA-H*4821A*)	45,500 [13.3]	33,000 [9.7]	12,500 [3.7]	11.70	13.00	77	1,500 [708]
	UHLA-HM4821 (RCSA-H*4821A*)	46,500 [13.6]	33,600 [9.8]	12,900 [3.8]	12.30	13.50	77	1,575 [743]
	UHSA-HM4821 (RCSA-H*4821A*)	45,500 [13.3]	33,000 [9.7]	12,500 [3.7]	11.70	13.00	77	1,500 [708]
	24AHLA48HM (RCSA-H*4824A*)	46,500 [13.6]	33,800 [9.9]	12,700 [3.7]	12.55	14.00	77	1,600 [755]
	24AHSA48HM (RCSA-H*4824A*)	45,500 [13.3]	33,000 [9.7]	12,500 [3.7]	11.70	13.00	77	1,500 [708]
	UHLA-HM4824 (RCSA-H*4824A*)	46,500 [13.6]	33,800 [9.9]	12,700 [3.7]	12.55	14.00	77	1,600 [755]

① Highest sales volume tested combination required by D.O.E. test procedures.

[ ] Designates Metric Conversions

Performance Data @ ARI Standard Conditions—Cooling (con't.)

Model Numbers		80°F [26.5°C] DB/67°F [19.5°C] WB Indoor Air 95°F [35°C] DB Outdoor Air					Sound Rating dB	Indoor CFM [L/s]
Outdoor Unit 13AJA	Indoor Coil and/or Air Handler	Total Capacity BTU/H [kW]	Net Sensible BTU/H [kW]	Net Latent BTU/H [kW]	EER	SEER		
48	UHSA-HM4824 (RCSA-H*4824A*)	45,500 [13.3]	33,000 [9.7]	12,500 [3.7]	11.70	13.00	77	1,500 [708]
	TCQC-4821A	45,500 [13.3]	33,500 [9.8]	12,000 [3.5]	11.30	13.00	77	1,600 [755]
	TCQC-4824A	45,500 [13.3]	33,500 [9.8]	12,000 [3.5]	11.30	13.00	77	1,600 [755]
60	RCFA-H*6024A* ①	57,000 [16.7]	39,400 [11.5]	17,600 [5.2]	11.10	13.00	77	1,725 [814]
	RCFA-A*6024A*	57,000 [16.7]	39,400 [11.5]	17,600 [5.2]	11.10	13.00	77	1,725 [814]
	UBHK-25 (RCHA-60A1)	55,000 [16.1]	36,550 [10.7]	18,450 [5.4]	11.50	13.45	77	1,800 [849]
	25AHBA60HM (RCHJ-60A1)	55,000 [16.1]	35,750 [10.5]	19,250 [5.6]	11.20	13.00	77	1,800 [849]
	UBHK-25 (RCHJ-60A1)	56,000 [16.4]	37,300 [10.9]	18,700 [5.5]	11.30	13.00	77	2,000 [944]
	24AHLA60HM (RCSA-H*6024A*)	58,000 [17.0]	39,400 [11.5]	18,600 [5.4]	11.75	13.50	77	1,800 [849]
	UHLA-HM6024 (RCSA-H*6024A*)	58,000 [17.0]	39,400 [11.5]	18,600 [5.4]	11.75	13.50	77	1,800 [849]

① Highest sales volume tested combination required by D.O.E. test procedures.

[ ] Designates Metric Conversions

Electrical and Physical Data

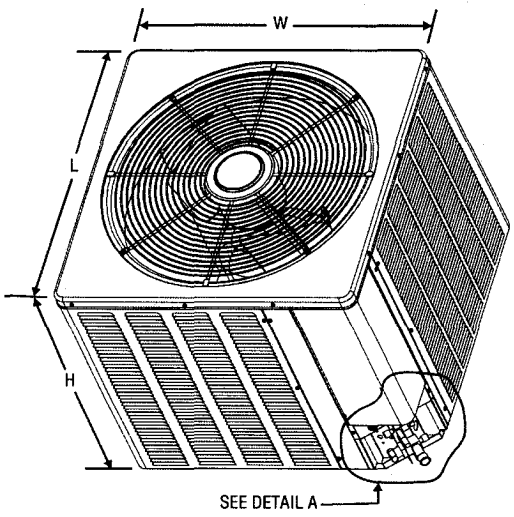
Model Number 13AJA	ELECTRICAL							PHYSICAL					
	Phase Frequency [HZ] Voltage [Volts]	Compressor		Fan Motor Full Load Amperes (FLA)	Minimum Circuit Ampacity Amperes	Fuse or HACR Circuit Breaker		Outdoor Coil			Refrigerant Per Circuit Oz. [g]	Weight	
		Rated Load Amperes (RLA)	Locked Rotor Amperes (LRA)			Minimum Amperes	Maximum Amperes	Face Area Sq. Ft. [m²]	No. Rows	CFM [L/s]		Net Lbs. [kg]	Shipping Lbs. [kg]
18	1-60-208/230	7.7/7.7	40.3	1.0	11/11	15/15	15/15	8.43 [0.78]	1	1900 [897]	67 [1899]	150 [68.0]	158 [71.7]
24	1-60-208/230	10.4/10.4	54	0.6	14/14	20/20	20/20	11.06 [1.03]	1	1700 [802]	77 [2183]	155 [70.3]	163 [73.9]
30	1-60-208/230	14.1/14.1	68	0.8	19/19	25/25	30/30	13.72 [1.27]	1	2325 [1097]	98 [2778]	175 [79.4]	185 [83.9]
36	1-60-208/230	14.4/14.4	78	0.8	19/19	25/25	30/30	16.39 [1.52]	1	2800 [1321]	108 [3062]	200 [90.7]	212 [96.2]
42	1-60-208/230	19.2/19.2	105	0.8	25/25	30/30	40/40	16.39 [1.52]	1	2800 [1321]	121 [3430]	205 [93.0]	217 [98.4]
48	1-60-208/230	21.1/21.1	115	1.2	28/28	35/35	45/45	16.39 [1.52]	1	3300 [1557]	123 [3487]	210 [95.3]	222 [100.7]
60	1-60-208/230	25.3/25.3	150	1.2	33/33	40/40	50/50	21.85 [2.03]	1	3575 [1687]	191 [5415]	247 [112]	258 [117]

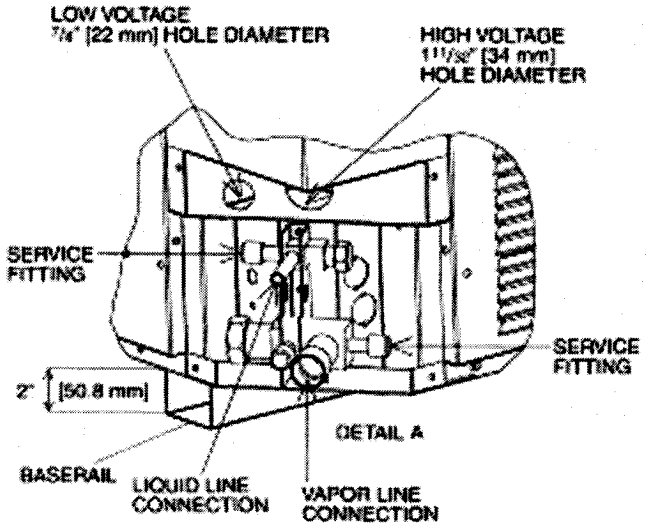
NOTE: Factory Refrigerant Charge includes refrigerant for 15 feet of standard line set.

Unit Dimensions

Model No. 13AJA	Unit Dimensions		
	Width "W" Inches	Length "L" Inches	Height "H" Inches
18, 24	23 5/8 [600]	23 5/8 [600]	24 1/4 [616]
30	27 5/8 [702]	27 5/8 [702]	24 1/4 [616]
36, 42, 48	31 5/8 [803]	31 5/8 [803]	27 15/16 [710]
60	31 5/8 [803]	31 5/8 [803]	35 15/16 [913]

[ ] Designates Metric Conversions





Condensing Unit Refrigerant Line Size Information

System Capacity	Liquid Line Connection Size (Inch I.D.)	Line Size (Inch O.D.) [mm]	Liquid Line Size – Outdoor Unit Above Indoor Coil (Cooling Only—Does not apply to Heat Pumps)						Liquid Line Size – Outdoor Unit Below Indoor Coil (Cooling Only)					
			Total Equivalent Length—Feet [m]						Total Equivalent Length—Feet [m]					
			25 [7.62]	50 [15.24]	75 [22.86]	100 [30.48]	125 [38.10]	150 [45.72]	25 [7.62]	50 [15.24]	75 [22.86]	100 [30.48]	125 [38.10]	150 [45.72]
			Minimum Vertical Separation—Feet [m]						Maximum Vertical Separation—Feet [m]					
1½ Ton	3/8″ [9.53]	1/4 [6.35]	0	0	5 [1.52]	18 [5.49]	31 [9.45]	44 [13.41]	21 [6.40]	8 [2.44]	N/A	N/A	N/A	N/A
		5/16 [7.94]	0	0	0	0	0	0	25 [7.62]	27 [8.23]	24 [7.32]	21 [6.40]	17 [5.18]	14 [4.27]
		3/8* [9.53]	0	0	0	0	0	0	25 [7.62]	40 [12.19]	39 [11.89]	38 [11.58]	37 [11.28]	35 [10.67]
2 Ton	3/8″ [9.53]	1/4 [6.35]	0	5 [1.52]	27 [8.23]	48 [14.63]	69 [21.03]	91 [27.74]	16 [4.88]	N/A	N/A	N/A	N/A	N/A
		5/16 [7.94]	0	0	0	0	0	0	25 [7.62]	26 [7.92]	21 [6.40]	15 [4.57]	10 [3.05]	5 [1.52]
		3/8* [9.53]	0	0	0	0	0	0	25 [7.62]	38 [11.58]	36 [10.97]	35 [10.67]	33 [10.06]	31 [9.45]
2½ Ton	3/8″ [9.53]	1/4 [6.35]	0	34 [10.36]	69 [21.03]	N/A	N/A	N/A	0	N/A	N/A	N/A	N/A	N/A
		5/16 [7.94]	0	0	0	0	9 [2.74]	18 [5.49]	25 [7.62]	17 [5.18]	8 [2.44]	0	N/A	N/A
		3/8* [9.53]	0	0	0	0	0	0	25 [7.62]	37 [11.28]	34 [10.36]	31 [9.45]	29 [8.84]	26 [7.92]
3 Ton	3/8″ [9.53]	5/16 [7.94]	0	0	0	6 [1.83]	17 [5.18]	28 [8.53]	25 [7.62]	15 [4.57]	4 [1.22]	N/A	N/A	N/A
		3/8* [9.53]	0	0	0	0	0	0	25 [7.62]	30 [9.14]	26 [7.92]	23 [7.01]	19 [5.79]	16 [4.88]
3½ Ton	3/8″ [9.53]	5/16 [7.94]	0	0	0	13 [3.96]	28 [8.53]	43 [13.11]	25 [7.62]	17 [5.18]	2 [0.61]	N/A	N/A	N/A
		3/8* [9.53]	0	0	0	0	0	0	25 [7.62]	37 [11.28]	32 [9.75]	28 [8.53]	23 [7.01]	18 [5.49]
4 Ton	3/8″ [9.53]	3/8* [9.53]	0	0	0	0	0	0	25 [7.62]	33 [10.06]	27 [8.23]	21 [6.40]	15 [4.57]	9 [2.74]
		1/2 [12.57]	0	0	0	0	0	0	25 [7.62]	43 [13.11]	42 [12.80]	40 [12.19]	39 [11.89]	38 [11.58]
5 Ton	3/8″ [9.53]	3/8* [9.53]	0	0	0	0	0	9 [2.74]	25 [7.62]	25 [7.62]	17 [5.18]	8 [2.44]	0	N/A
		1/2 [12.57]	0	0	0	0	0	0	25 [7.62]	39 [11.89]	37 [11.28]	36 [10.97]	34 [10.36]	32 [9.75]

NOTES: *Standard line size
N/A = Application not recommended.

Suction Line Length/Size versus Capacity Multiplier (R-22)								
Unit Size		1½ Ton	2 Ton	2½ Ton	3 Ton	3½ Ton	4 Ton	5 Ton
Suction Line Connection Size		3/4" [19.05] I.D.			7/8" [22.23] I.D.			
Suction Line Run—Feet [m]		5/8" [15.88 mm] O.D. Opt. 3/4" [19.05 mm] O.D. Std.*	5/8" [15.88 mm] O.D. Opt. 3/4" [19.05 mm] O.D. Std.* 7/8" [22.23 mm] O.D. Opt.		3/4" [19.05 mm] O.D. Opt. 7/8" [22.23 mm] O.D. Std.*	3/4" [19.05 mm] O.D. Opt. 7/8" [22.23 mm] O.D. Std.* 1 1/8" [28.58 mm] O.D. Opt.	7/8" [22.23 mm] O.D. Opt. 1 1/8" [28.58 mm] O.D. Std.*	
25' [7.62]	Optional	.99	.99	.98	.99	.99	.99	.99
	Standard	1.00	1.00	1.00	1.00	1.00	1.00	1.00
	Optional	—	1.00	1.00	—	1.00	—	—
50' [15.24]	Optional	.97	.96	.96	.98	.97	.98	.97
	Standard	.99	.99	.98	.99	.98	.99	.99
	Optional	—	.99	.99	—	1.00	—	—
100' [30.48]	Optional	.94	.92	.94	.95	.93	.95	.95
	Standard	.96	.96	.96	.96	.96	.98	.98
	Optional	—	.97	.97	—	.98	—	—
150' [45.72]	Optional	.90	.89	.92	.93	.92	.93	.93
	Standard	.93	.93	.93	.94	.94	.96	.96
	Optional	—	.95	.95	—	.96	—	—

NOTES: *Standard line size
Using suction line larger than shown in chart will result in poor oil return and is not recommended.

[ ] Designates Metric Conversions

BEFORE PURCHASING THIS APPLIANCE, READ IMPORTANT ENERGY COST AND EFFICIENCY INFORMATION AVAILABLE FROM YOUR RETAILER.

GENERAL TERMS OF LIMITED WARRANTY

ICECO℠ will furnish a replacement for any part of this product which fails in normal use and service within the applicable period stated, in accordance with the terms of the limited warranty.

For Complete Details of the Limited Warranty, Including Applicable Terms and Conditions, See Your Local Installer or visit www.ICECOhvac.com.

Condenser Coil leaks caused by factory defects ..... Five (5) Years
Compressor ..... Five (5) Years
Any Other Part ..... Five (5) Years

APPENDIX I

Cadna Analysis Data and Results

Cadna/A-Berechnung
Version 3.6.117 (32 Bit)
Datei: X:\Jobs 2006\A61042N-Flash Holdings-Kenwood Apts.-Spring Valley-MB\A61042N2\Cadna\scaledmodel_6.cna
Start: 23.05.07 15:54:38
Berechnungsparameter:

General	
Country	Germany (TA Lärm)
Max. Error (dB)	0
Max. Search Radius (m)	2000
Min. Dist Src to Rcvr	0
Partition	
Raster Factor	0.5
Max. Length of Section (m)	1000
Min. Length of Section (m)	1
Min. Length of Section (%)	0
Proj. Line Sources	On
Proj. Area Sources	On
Ref. Time	
Reference Time Day (min)	960
Reference Time Night (min)	480
Daytime Penalty (dB)	0
Recr. Time Penalty (dB)	6
Night-time Penalty (dB)	10
DTM	
Standard Height (m)	0
Model of Terrain	Triangulation
Reflection	
max. Order of Reflection	0
Search Radius Src/Rcvr	100.00 100.00
Max. Distance Source - Rcvr	1000.00 1000.00
Min. Distance Rvcr - Reflector	1.00 1.00
Min. Distance Source - Reflector	0.1
Industrial (ISO 9613)	
Lateral Diffraction	some Obj
Obst. within Area Src do not shield	On
Screening	Excl. Ground Att. over Barrier
	Dz with limit
Barrier Coefficients C1,2,3	3.0 20.0 0.0
Temperature (°C)	10
rel. Humidity (%)	70
Ground Absorption G	1
Wind Speed for Dir.(m/s)	3
Roads (RLS-90)	
Strictly acc. to RLS-90	
Railways (Schall 03)	
Strictly acc. to Schall 03 / Schall-Transrapid	
Aircraft (AzB)	
Strictly acc. to AzB	

Receiver: R1- north
ID: receiver
X: 148.4
Y: 179.08
Z: 1.52
Ground: 0

ISO	Bezeichnung	ID	X	Y	Z	LxT	LxN	Dist.	hm	Freq	Adiv	Agr	Abar	z	Aatm	LtotT	LtotN
	13AJA Series Model 60	CondensingUnit	146.82	165.06	0.61	77	77	14.14	1.27	500	34.01	4.09	2.67	0.06	0.03	36.21	36.21
	13AJA Series Model 60	CondensingUnit	146.85	159.4	0.61	77	77	19.77	1.28	500	36.92	5.43	3.04	0.05	0.04	31.57	31.57
	13AJA Series Model 60	CondensingUnit	146.85	158.5	0.61	77	77	20.66	1.38	500	37.3	5.63	5.86	0.13	0.04	28.17	28.17
	13AJA Series Model 60	CondensingUnit	146.84	154.41	0.61	77	77	24.74	1.38	500	38.87	6.49	4.63	0.12	0.05	26.97	26.97
	13AJA Series Model 60	CondensingUnit	146.81	147.06	0.61	77	77	32.07	1.31	500	41.12	7.87	0.48	0.05	0.06	27.46	27.46
	13AJA Series Model 60	CondensingUnit	146.84	146.14	0.61	77	77	32.99	1.37	500	41.37	8.03	2.9	0.11	0.06	24.64	24.64
	13AJA Series Model 60	CondensingUnit	146.84	142.15	0.61	77	77	36.97	1.38	500	42.36	8.69	2.82	0.13	0.07	23.06	23.06
	13AJA Series Model 60	CondensingUnit	146.81	134.8	0.61	77	77	44.32	1.33	500	43.93	9.78	0	0.04	0.09	23.21	23.21
Limit. Value D/N:			0	0													
Level D/N:			39.0451	39.0451													

Receiver: R2 - east
ID: receiver
X: 152.57
Y: 165.36
Z: 1.52
Ground: 0

ISO	Bezeichnung	ID	X	Y	Z	LxT	LxN	Dist.	hm	Freq	Adiv	Agr	Abar	z	Aatm	LtotT	LtotN
	13AJA Series Model 60	CondensingUnit	146.82	165.06	0.61	77	77	5.83	1.35	500	26.32	1.81	6.58	0.13	0.01	42.28	42.28
	13AJA Series Model 60	CondensingUnit	146.85	159.4	0.61	77	77	8.31	1.35	500	29.4	2.53	5.06	0.09	0.02	40	40
	13AJA Series Model 60	CondensingUnit	146.85	158.5	0.61	77	77	8.98	1.42	500	30.06	2.72	7.44	0.13	0.02	36.75	36.75
	13AJA Series Model 60	CondensingUnit	146.84	154.41	0.61	77	77	12.39	1.43	500	32.86	3.64	6.52	0.11	0.02	33.95	33.95
	13AJA Series Model 60	CondensingUnit	146.81	147.06	0.61	77	77	19.21	1.35	500	36.67	5.3	0.85	0.04	0.04	34.15	34.15
	13AJA Series Model 60	CondensingUnit	146.84	146.14	0.61	77	77	20.07	1.44	500	37.05	5.5	4.64	0.09	0.04	29.78	29.78
	13AJA Series Model 60	CondensingUnit	146.84	142.15	0.61	77	77	23.92	1.44	500	38.58	6.32	4.45	0.11	0.05	27.6	27.6
	13AJA Series Model 60	CondensingUnit	146.81	134.8	0.61	77	77	31.11	1.38	500	40.86	7.7	0	0.03	0.06	28.38	28.38
Limit. Value D/N:			0	0													
Level D/N:			45.9017	45.9017													

Receiver:	R3 - east
ID:	receiver
X:	152.57
Y:	151.74
Z:	1.52
Ground:	0

ISO	Bezeichnung	ID	X	Y	Z	LxT	LxN	Dist.	hm	Freq	Adiv	Agr	Abar	z	Aatm	LtotT	LtotN
	13AJA Series Model 60	CondensingUnit	146.84	154.41	0.61	77	77	6.39	1.35	500	27.1	1.98	6.2	0.12	0.01	41.71	41.71
	13AJA Series Model 60	CondensingUnit	146.81	147.06	0.61	77	77	7.48	1.35	500	28.48	2.3	5.52	0.1	0.01	40.69	40.69
	13AJA Series Model 60	CondensingUnit	146.84	146.14	0.61	77	77	8.06	1.4	500	29.13	2.46	7.06	0.11	0.02	38.33	38.33
	13AJA Series Model 60	CondensingUnit	146.85	158.5	0.61	77	77	8.9	1.35	500	29.99	2.7	4.75	0.09	0.02	39.54	39.54
	13AJA Series Model 60	CondensingUnit	146.85	159.4	0.61	77	77	9.6	1.42	500	30.65	2.89	6.96	0.11	0.02	36.48	36.48
	13AJA Series Model 60	CondensingUnit	146.84	142.15	0.61	77	77	11.21	1.43	500	31.99	3.33	7.05	0.12	0.02	34.6	34.6
	13AJA Series Model 60	CondensingUnit	146.82	165.06	0.61	77	77	14.54	1.42	500	34.25	4.19	5.35	0.08	0.03	33.18	33.18
	13AJA Series Model 60	CondensingUnit	146.81	134.8	0.61	77	77	17.92	1.35	500	36.06	5	1.24	0.04	0.03	34.66	34.66
Limit. Value D/N:			0	0													
Level D/N:			47.3781	47.3781													

Receiver:	R4 - east
ID:	receiver
X:	152.57
Y:	136.11
Z:	1.52
Ground:	0

ISO	Bezeichnung	ID	X	Y	Z	LxT	LxN	Dist.	hm	Freq	Adiv	Agr	Abar	z	Aatm	LtotT	LtotN
	13AJA Series Model 60	CondensingUnit	146.81	134.8	0.61	77	77	5.98	1.35	500	26.53	1.85	6.48	0.13	0.01	42.13	42.13
	13AJA Series Model 60	CondensingUnit	146.84	142.15	0.61	77	77	8.38	1.35	500	29.46	2.55	5.02	0.09	0.02	39.95	39.95
	13AJA Series Model 60	CondensingUnit	146.84	146.14	0.61	77	77	11.59	1.35	500	32.28	3.43	3.51	0.07	0.02	37.75	37.75
	13AJA Series Model 60	CondensingUnit	146.81	147.06	0.61	77	77	12.41	1.43	500	32.87	3.65	7.03	0.13	0.02	33.43	33.43
	13AJA Series Model 60	CondensingUnit	146.84	154.41	0.61	77	77	19.2	1.35	500	36.66	5.3	0.85	0.04	0.04	34.15	34.15
	13AJA Series Model 60	CondensingUnit	146.85	158.5	0.61	77	77	23.13	1.36	500	38.28	6.16	1.3	0.03	0.04	31.22	31.22
	13AJA Series Model 60	CondensingUnit	146.85	159.4	0.61	77	77	24	1.44	500	38.6	6.34	3.98	0.1	0.05	28.04	28.04
	13AJA Series Model 60	CondensingUnit	146.82	165.06	0.61	77	77	29.53	1.44	500	40.41	7.42	2.11	0.07	0.06	27.01	27.01
Limit. Value D/N:			0	0													
Level D/N:			45.957	45.957													

Receiver:	R5 - south
ID:	receiver
X:	147.17
Y:	121.52
Z:	1.52
Ground:	0

ISO	Bezeichnung	ID	X	Y	Z	LxT	LxN	Dist.	hm	Freq	Adiv	Agr	Abar	z	Aatm	LtotT	LtotN
	13AJA Series Model 60	CondensingUnit	146.81	134.8	0.61	77	77	13.32	1.2	500	33.49	3.88	3.24	0.07	0.03	36.36	36.36
	13AJA Series Model 60	CondensingUnit	146.84	142.15	0.61	77	77	20.66	1.13	500	37.3	5.63	0	0	0.04	34.03	34.03
	13AJA Series Model 60	CondensingUnit	146.84	146.14	0.61	77	77	24.65	1.15	500	38.83	6.47	0	0	0.05	31.65	31.65
	13AJA Series Model 60	CondensingUnit	146.81	147.06	0.61	77	77	25.56	1.21	500	39.15	6.65	0.97	0.1	0.05	30.18	30.18
	13AJA Series Model 60	CondensingUnit	146.84	154.41	0.61	77	77	32.91	1.16	500	41.35	8.02	0	0.01	0.06	27.57	27.57
	13AJA Series Model 60	CondensingUnit	146.85	158.5	0.61	77	77	36.99	1.17	500	42.36	8.7	0	0.01	0.07	25.87	25.87
	13AJA Series Model 60	CondensingUnit	146.85	159.4	0.61	77	77	37.89	1.21	500	42.57	8.84	0	0.08	0.07	25.52	25.52
	13AJA Series Model 60	CondensingUnit	146.82	165.06	0.61	77	77	43.56	1.21	500	43.78	9.67	0	0.06	0.08	23.46	23.46
Limit. Value D/N:			0	0													
Level D/N:			40.3743	40.3743													

Receiver:	R6 - west
ID:	receiver
X:	118.66
Y:	151.85

Z:		1.52	
Ground:		0	

ISO	Bezeichnung	ID	X	Y	Z	LxT	LxN	Dist.	hm	Freq	Adiv	Agr	Abar	z	Aatm	LtotT	LtotN
	13AJA Series Model 60	CondensingUnit	146.84	154.41	0.61	77	77	28.31	7.04	500	40.04	7.19	17.66	9.17	0.05	12.05	12.05
	13AJA Series Model 60	CondensingUnit	146.81	147.06	0.61	77	77	28.57	7.05	500	40.12	7.24	17.61	9.18	0.06	11.98	11.98
	13AJA Series Model 60	CondensingUnit	146.84	146.14	0.61	77	77	28.77	7.04	500	40.18	7.27	17.58	9.13	0.06	11.92	11.92
	13AJA Series Model 60	CondensingUnit	146.85	158.5	0.61	77	77	28.98	7.04	500	40.24	7.31	17.54	9.11	0.06	11.84	11.84
	13AJA Series Model 60	CondensingUnit	146.85	159.4	0.61	77	77	29.2	7.04	500	40.31	7.35	17.5	9.09	0.06	11.78	11.78
	13AJA Series Model 60	CondensingUnit	146.84	142.15	0.61	77	77	29.81	7.04	500	40.49	7.47	17.4	9.05	0.06	11.58	11.58
	13AJA Series Model 60	CondensingUnit	146.82	165.06	0.61	77	77	31.12	7.05	500	40.86	7.7	17.08	8.97	0.06	11.3	11.3
	13AJA Series Model 60	CondensingUnit	146.81	134.8	0.61	77	77	32.92	7.05	500	41.35	8.02	16.84	8.85	0.06	10.73	10.73

Limit. Value D/N:		0	0
Level D/N:		20.6975	20.6975

Berechnung, Ende:	23.05.07	15:54:39 (1 s)

Mech Noise Impacts at Property Line Receivers w/ Proposed 6 ft Perimeter Wall

Name	ID	Level Lr		Land Use			Height		Coordinates		
		Day	Night	Type	Auto	Noise Type			X	Y	Z
		(dBA)	(dBA)				(m)		(m)	(m)	(m)
R1- north	receiver	39.0	39.0		x	Total	1.52	r	148.40	179.08	1.52
R2 - east	receiver	45.9	45.9		x	Total	1.52	r	152.57	165.36	1.52
R3 - east	receiver	47.4	47.4		x	Total	1.52	r	152.57	151.74	1.52
R4 - east	receiver	46.0	46.0		x	Total	1.52	r	152.57	136.11	1.52
R5 - south	receiver	40.4	40.4		x	Total	1.52	r	147.17	121.52	1.52
R6 - west	receiver	20.7	20.7		x	Total	1.52	r	118.66	151.85	1.52

Partial Mech Noise Impacts at Property Line Receivers w/ Proposed 6 ft Perime

Source		Partial Level Day					
Name	ID	R1- north	R2 - east	R3 - east	R4 - east	R5 - south	R6 - west
unitoneHVAC	CondensingUnit	23.2	28.4	34.7	42.1	36.4	10.7
unittwoHVAC	CondensingUnit	23.1	27.6	34.6	39.9	34.0	11.6
unitthreeHVAC	CondensingUnit	24.6	29.8	38.3	37.7	31.6	11.9
unitfourHVAC	CondensingUnit	27.5	34.1	40.7	33.4	30.2	12.0
unitfiveHVAC	CondensingUnit	27.0	33.9	41.7	34.1	27.6	12.1
unitsixHVAC	CondensingUnit	28.2	36.8	39.5	31.2	25.9	11.8
unitsevenHVAC	CondensingUnit	31.6	40.0	36.5	28.0	25.5	11.8
uniteightHVAC	CondensingUnit	36.2	42.3	33.2	27.0	23.5	11.3

Cadna/A-Berechnung
Version 3.6.117 (32 Bit)
Datei: X:\Jobs 2006\A61042N-Flash Holdings-Kenwood Apts.-Spring Valley-MB\A61042N2\Cadna\scaledmodel_7.5.cna
Start: 23.05.07 16:16:43
Berechnungsparameter:

General	
Country	Germany (TA Lärm)
Max. Error (dB)	0
Max. Search Radius (m)	2000
Min. Dist Src to Rcvr	0
Partition	
Raster Factor	0.5
Max. Length of Section (m)	1000
Min. Length of Section (m)	1
Min. Length of Section (%)	0
Proj. Line Sources	On
Proj. Area Sources	On
Ref. Time	
Reference Time Day (min)	960
Reference Time Night (min)	480
Daytime Penalty (dB)	0
Recr. Time Penalty (dB)	6
Night-time Penalty (dB)	10
DTM	
Standard Height (m)	0
Model of Terrain	Triangulation
Reflection	
max. Order of Reflection	0
Search Radius Src/Rcvr	100.00 100.00
Max. Distance Source - Rcvr	1000.00 1000.00
Min. Distance Rvcr - Reflector	1.00 1.00
Min. Distance Source - Reflector	0.1
Industrial (ISO 9613)	
Lateral Diffraction	some Obj
Obst. within Area Src do not shield	On
Screening	Excl. Ground Att. over Barrier
	Dz with limit
Barrier Coefficients C1,2,3	3.0 20.0 0.0
Temperature (°C)	10
rel. Humidity (%)	70
Ground Absorption G	1
Wind Speed for Dir.(m/s)	3
Roads (RLS-90)	
Strictly acc. to RLS-90	
Railways (Schall 03)	
Strictly acc. to Schall 03 / Schall-Transrapid	
Aircraft (AzB)	
Strictly acc. to AzB	

Receiver: R1- north
ID: receiver
X: 148.4
Y: 179.08
Z: 1.52
Ground: 0

ISO	Bezeichnung	ID	X	Y	Z	LxT	LxN	L/A	Dist.	hm	Freq	Adiv	Agr	Abar	z	Aatm	LtotT	LtotN
	13AJA Series Model 60	CondensingUnit	146.82	165.06	0.61	77	77	1	14.14	1.5	500	34.01	4.09	6.19	0.26	0.03	32.68	32.68
	13AJA Series Model 60	CondensingUnit	146.85	159.4	0.61	77	77	1	19.77	1.49	500	36.92	5.43	4.52	0.24	0.04	30.1	30.1
	13AJA Series Model 60	CondensingUnit	146.85	158.5	0.61	77	77	1	20.66	1.61	500	37.3	5.63	8.99	0.31	0.04	25.04	25.04
	13AJA Series Model 60	CondensingUnit	146.84	154.41	0.61	77	77	1	24.74	1.6	500	38.87	6.49	7.93	0.29	0.05	23.67	23.67
	13AJA Series Model 60	CondensingUnit	146.81	147.06	0.61	77	77	1	32.07	1.52	500	41.12	7.87	5.42	0.22	0.06	22.52	22.52
	13AJA Series Model 60	CondensingUnit	146.84	146.14	0.61	77	77	1	32.99	1.6	500	41.37	8.03	6.26	0.28	0.06	21.28	21.28
	13AJA Series Model 60	CondensingUnit	146.84	142.15	0.61	77	77	1	36.97	1.6	500	42.36	8.69	5.86	0.3	0.07	20.01	20.01
	13AJA Series Model 60	CondensingUnit	146.81	134.8	0.61	77	77	1	44.32	1.54	500	43.93	9.78	3.44	0.21	0.09	19.76	19.76
Limit. Valu		0	0															
Level D/N:		35.9519	35.9519															

Receiver: R2 - east
ID: receiver
X: 152.57
Y: 165.36

Z: 1.52
Ground: 0

ISO	Bezeichnung	ID	X	Y	Z	LxT	LxN	L/A		Dist.	hm	Freq	Adiv	Agr	Abar	z	Aatm	LtotT	LtotN
	13AJA Series Model 60	CondensingUnit	146.82	165.06	0.61	77	77		1	5.83	1.58	500	26.32	1.81	10.12	0.43	0.01	38.74	38.74
	13AJA Series Model 60	CondensingUnit	146.85	159.4	0.61	77	77		1	8.31	1.58	500	29.4	2.53	8.25	0.31	0.02	36.8	36.8
	13AJA Series Model 60	CondensingUnit	146.85	158.5	0.61	77	77		1	8.98	1.64	500	30.06	2.72	10.59	0.31	0.02	33.61	33.61
	13AJA Series Model 60	CondensingUnit	146.84	154.41	0.61	77	77		1	12.39	1.65	500	32.86	3.64	9.28	0.24	0.02	31.19	31.19
	13AJA Series Model 60	CondensingUnit	146.81	147.06	0.61	77	77		1	19.21	1.58	500	36.67	5.3	3.05	0.14	0.04	31.95	31.95
	13AJA Series Model 60	CondensingUnit	146.84	146.14	0.61	77	77		1	20.07	1.66	500	37.05	5.5	6.76	0.18	0.04	27.66	27.66
	13AJA Series Model 60	CondensingUnit	146.84	142.15	0.61	77	77		1	23.92	1.67	500	38.58	6.32	6.12	0.18	0.05	25.94	25.94
	13AJA Series Model 60	CondensingUnit	146.81	134.8	0.61	77	77		1	31.11	1.58	500	40.86	7.7	2.16	0.08	0.06	26.22	26.22
Limit. Valu		0	0																
Level D/N:		42.7499	42.7499																

Receiver: R3 - east
ID: receiver
X: 152.57
Y: 151.74
Z: 1.52
Ground: 0

ISO	Bezeichnung	ID	X	Y	Z	LxT	LxN	L/A		Dist.	hm	Freq	Adiv	Agr	Abar	z	Aatm	LtotT	LtotN
	13AJA Series Model 60	CondensingUnit	146.84	154.41	0.61	77	77		1	6.39	1.58	500	27.1	1.98	9.66	0.4	0.01	38.25	38.25
	13AJA Series Model 60	CondensingUnit	146.81	147.06	0.61	77	77		1	7.48	1.58	500	28.48	2.3	8.83	0.34	0.01	37.38	37.38
	13AJA Series Model 60	CondensingUnit	146.84	146.14	0.61	77	77		1	8.06	1.6	500	29.13	2.46	10.68	0.32	0.02	34.72	34.72
	13AJA Series Model 60	CondensingUnit	146.85	158.5	0.61	77	77		1	8.9	1.58	500	29.99	2.7	7.87	0.29	0.02	36.43	36.43
	13AJA Series Model 60	CondensingUnit	146.85	159.4	0.61	77	77		1	9.6	1.63	500	30.65	2.89	10.19	0.28	0.02	33.25	33.25
	13AJA Series Model 60	CondensingUnit	146.84	142.15	0.61	77	77		1	11.21	1.65	500	31.99	3.33	9.84	0.27	0.02	31.82	31.82
	13AJA Series Model 60	CondensingUnit	146.82	165.06	0.61	77	77		1	14.54	1.64	500	34.25	4.19	8.2	0.2	0.03	30.33	30.33
	13AJA Series Model 60	CondensingUnit	146.81	134.8	0.61	77	77		1	17.92	1.58	500	36.06	5	3.51	0.14	0.03	32.38	32.38
Limit. Valu		0	0																
Level D/N:		44.1414	44.1414																

Receiver: R4 - east
ID: receiver
X: 152.57
Y: 136.11
Z: 1.52
Ground: 0

ISO	Bezeichnung	ID	X	Y	Z	LxT	LxN	L/A		Dist.	hm	Freq	Adiv	Agr	Abar	z	Aatm	LtotT	LtotN
	13AJA Series Model 60	CondensingUnit	146.81	134.8	0.61	77	77		1	5.98	1.58	500	26.53	1.85	10	0.42	0.01	38.6	38.6
	13AJA Series Model 60	CondensingUnit	146.84	142.15	0.61	77	77		1	8.38	1.58	500	29.46	2.55	8.21	0.31	0.02	36.76	36.76
	13AJA Series Model 60	CondensingUnit	146.84	146.14	0.61	77	77		1	11.59	1.58	500	32.28	3.43	6.33	0.22	0.02	34.94	34.94
	13AJA Series Model 60	CondensingUnit	146.81	147.06	0.61	77	77		1	12.41	1.66	500	32.87	3.65	9.56	0.26	0.02	30.9	30.9
	13AJA Series Model 60	CondensingUnit	146.84	154.41	0.61	77	77		1	19.2	1.58	500	36.66	5.3	3.03	0.14	0.04	31.97	31.97
	13AJA Series Model 60	CondensingUnit	146.85	158.5	0.61	77	77		1	23.13	1.58	500	38.28	6.16	1.71	0.11	0.04	30.81	30.81
	13AJA Series Model 60	CondensingUnit	146.85	159.4	0.61	77	77		1	24	1.67	500	38.6	6.34	5.79	0.16	0.05	26.22	26.22
	13AJA Series Model 60	CondensingUnit	146.82	165.06	0.61	77	77		1	29.53	1.66	500	40.41	7.42	3.92	0.13	0.06	25.2	25.2
Limit. Valu		0	0																
Level D/N:		42.9809	42.9809																

Receiver: R5 - south
ID: receiver
X: 147.17
Y: 121.52
Z: 1.52
Ground: 0

ISO	Bezeichnung	ID	X	Y	Z	LxT	LxN	L/A		Dist.	hm	Freq	Adiv	Agr	Abar	z	Aatm	LtotT	LtotN
	13AJA Series Model 60	CondensingUnit	146.81	134.8	0.61	77	77		1	13.32	1.2	500	33.49	3.88	3.24	0.07	0.03	36.36	36.36
	13AJA Series Model 60	CondensingUnit	146.84	142.15	0.61	77	77		1	20.66	1.13	500	37.3	5.63	0	0	0.04	34.03	34.03
	13AJA Series Model 60	CondensingUnit	146.84	146.14	0.61	77	77		1	24.65	1.15	500	38.83	6.47	0	0	0.05	31.65	31.65
	13AJA Series Model 60	CondensingUnit	146.81	147.06	0.61	77	77		1	25.56	1.21	500	39.15	6.65	0.97	0.1	0.05	30.18	30.18
	13AJA Series Model 60	CondensingUnit	146.84	154.41	0.61	77	77		1	32.91	1.16	500	41.35	8.02	0	0.01	0.06	27.57	27.57
	13AJA Series Model 60	CondensingUnit	146.85	158.5	0.61	77	77		1	36.99	1.17	500	42.36	8.7	0	0.01	0.07	25.87	25.87
	13AJA Series Model 60	CondensingUnit	146.85	159.4	0.61	77	77		1	37.89	1.21	500	42.57	8.84	0	0.08	0.07	25.52	25.52
	13AJA Series Model 60	CondensingUnit	146.82	165.06	0.61	77	77		1	43.56	1.21	500	43.78	9.67	0	0.06	0.08	23.46	23.46
Limit. Valu		0	0																
Level D/N:		40.3743	40.3743																

Receiver:	R6 - west																				
ID:	receiver																				
X:		118.66																			
Y:		151.85																			
Z:		1.52																			
Ground:		0																			
ISO	Bezeichnung		ID	X	Y	Z	LxT	LxN	L/A		Dist.	hm	Freq	Adiv	Agr	Abar	z	Aatm	LtotT	LtotN	
	13AJA Series Model 60		CondensingUnit	146.84	154.41	0.61	77	77	1		28.31	7.04	500	40.04	7.19	17.66	9.17	0.05	12.05	12.05	
	13AJA Series Model 60		CondensingUnit	146.81	147.06	0.61	77	77	1		28.57	7.05	500	40.12	7.24	17.61	9.18	0.06	11.98	11.98	
	13AJA Series Model 60		CondensingUnit	146.84	146.14	0.61	77	77	1		28.77	7.04	500	40.18	7.27	17.58	9.13	0.06	11.92	11.92	
	13AJA Series Model 60		CondensingUnit	146.85	158.5	0.61	77	77	1		28.98	7.04	500	40.24	7.31	17.54	9.11	0.06	11.84	11.84	
	13AJA Series Model 60		CondensingUnit	146.85	159.4	0.61	77	77	1		29.2	7.04	500	40.31	7.35	17.5	9.09	0.06	11.78	11.78	
	13AJA Series Model 60		CondensingUnit	146.84	142.15	0.61	77	77	1		29.81	7.04	500	40.49	7.47	17.4	9.05	0.06	11.58	11.58	
	13AJA Series Model 60		CondensingUnit	146.82	165.06	0.61	77	77	1		31.12	7.05	500	40.86	7.7	17.08	8.97	0.06	11.3	11.3	
	13AJA Series Model 60		CondensingUnit	146.81	134.8	0.61	77	77	1		32.92	7.05	500	41.35	8.02	16.84	8.85	0.06	10.73	10.73	
Limit. Valu		0	0																		
Level D/N:		20.6975	20.6975																		
Berechnun	23.05.07		16:16:44 (1 s)																		

Mechanical Noise Impacts at Property Line Receivers w/ 7.5 ft Perimeter Wall

Name	ID	Level Lr		Land Use			Height		Coordinates		
		Day	Night	Type	Auto	Noise Type			X	Y	Z
		(dBA)	(dBA)				(m)		(m)	(m)	(m)
R1- north	receiver	36.0	36.0		x	Total	1.52	r	148.40	179.08	1.52
R2 - east	receiver	42.7	42.7		x	Total	1.52	r	152.57	165.36	1.52
R3 - east	receiver	44.1	44.1		x	Total	1.52	r	152.57	151.74	1.52
R4 - east	receiver	43.0	43.0		x	Total	1.52	r	152.57	136.11	1.52
R5 - south	receiver	40.4	40.4		x	Total	1.52	r	147.17	121.52	1.52
R6 - west	receiver	20.7	20.7		x	Total	1.52	r	118.66	151.85	1.52

Partial Mech Noise Impacts at Property Line Receivers w/ 7.5 ft Perimeter Wall

Source		Partial Level Day					
Name	ID	R1- north	R2 - east	R3 - east	R4 - east	R5 - south	R6 - west
unitoneHVAC	CondensingUnit	19.8	26.2	32.4	38.6	36.4	10.7
unittwoHVAC	CondensingUnit	20.0	25.9	31.8	36.8	34.0	11.6
unitthreeHVAC	CondensingUnit	21.3	27.7	34.7	34.9	31.6	11.9
unitfourHVAC	CondensingUnit	22.5	31.9	37.4	30.9	30.2	12.0
unitfiveHVAC	CondensingUnit	23.7	31.2	38.2	32.0	27.6	12.1
unitsixHVAC	CondensingUnit	25.0	33.6	36.4	30.8	25.9	11.8
unitsevenHVAC	CondensingUnit	30.1	36.8	33.3	26.2	25.5	11.8
uniteightHVAC	CondensingUnit	32.7	38.7	30.3	25.2	23.5	11.3